Juho Vieruaho

Proposing Key Actions to Enhance the Innovation Capability of the Service Expertise Unit

Helsinki Metropolia University of Applied Sciences

Master's Degree

Industrial Management

Master's Thesis

2 May 2018

Metropolia

Writing this thesis has been an important corner stone on my personal journey to the world of innovation. For someone like me who is an engineer by trade but comes from musical background, innovation offers a way to engage not only myself but also everyone around me in being more creative. I believe that creativity is an asset that can be learned and improved and with a right supportive environment in the company, innovation will create wonderful results. Not only can it create and improve new business but also create an engaging workplace culture where everyone can be part of a project that started from their own wonderful idea.

My company has offered me to take this journey beside from my daily work and with this thesis I can try to do my best to contribute back. I want to thank Francesca Granchelli for those long innovation obsessed discussions that were the source of insights for finding the topic, understanding the current issues and building the proposal to overcome them. Also, thanks to Marko Bervanakis for promoting me into any innovation related activity and to always having time for yet another discussion during the thesis Writing process.

The Industrial Management program is a fantastic curriculum with high quality lectures and a demand for high quality thesis execution. Not to forget the well-chosen student colleagues with whom we studied passionately and shared stories during the thesis journey. Thank you to each one of you. I also want to thank Dr. Thomas Rohweder, for the mentorship for the thesis especially for his genuine interest and the pragmatic but still very professional attitude. I also want to thank Zinaida Grabovskaia, PhL, for all the encouraging and for providing guidance during the studies and for her tireless thesis mentorship. Also, special thanks to the Bulevardi Library faculty for the endless support to my material requests.

Lastly, thanks to my great son with whom we did homework together and to my lovely wife for her endless support and who is also finishing her own fantastic thesis. We did it!

Juho Vieruaho
Kirkkonummi
May 6, 2018

Author	Juho Vieruaho
Title	Proposing Key Actions to Enhance the Innovation Capability of the Service Expertise Unit
Number of Pages	93 pages + 5 appendices
Date	6 May 2018
Degree	Master of Engineering
Degree Programme	Industrial Management
Instructors	Dr. Thomas Rohweder, Principal Lecturer Zinaida Grabovskaia, PhL, Senior Lecturer, Head of Program

The objective of the thesis is to propose key actions to enhance the innovation capability of the case company's Service Expertise Unit (SEU). The case company is one of the leading networking and telecommunications companies with over hundred years heritage of industry shaping innovations. It's centralized global Service Expertise Unit supports internal product development organization and operative market areas in services delivery for the external customers.

Aside from daily work, the added value creation by broad scale of incremental and even radical innovation lies at the very heart of SEU's existence with annual innovation program result of over 14 million Euros. However, the company's continuing extended cost cutting programs and a series of organizational changes have disturbed SEU's innovation capability, which leads to fewer valuable ideas and longer lead times to realize the ideas. At the same time the new Business Area Network's Serviceability initiative calls for enhanced innovation capability in its aim to cut costs and enhance customer experience with smart products and services.

By conducting series of interviews and workshops, and using barriers to innovation method, the study revealed 14 barriers, of which three had a severe impact. Together with the interview data and best practice found from the literature, the proposal of key actions was built and validated together with the key stakeholders. It proposes nine actions for improving the existing SEU's Innovation Framework and how to integrate it to the new Serviceability initiative focusing on 5G solutions. As a result, the organization decided to seize the last remaining activities within its current innovation framework and changing the focus towards the new Serviceability program.

The impacts of the thesis findings, if fully implemented, point to potentially significant increase in SEU's innovation capability. Also, it contributes to the company's core business area's capability to utilize its global service delivery expertise and insights for focused 5G innovation. For general application, outside the ICT scope, this study uses methods to reveal and overcome barriers to innovation which can be useful in enhancing innovation capability in any context.

Keywords	Innovation, Innovation Management, Barriers to Innovation, Innovation Capability.

Metropolia

List of Figures

List of Tables

Contents

1 Introduction

> *“The day I took on my new role I said that our industry does not respect tradition — it only respects innovation.” -Satya Nadella, CEO, Microsoft (Nadella 2014).*

In today’s highly competitive and changing ICT market, companies must seek ways to renew their businesses and find a way to sustain their competitive advantage. The challenge which the companies face is not about lack of innovativeness or creativity in the company, quite the opposite since usually that was the reason the company got into the position where they are. But the problem may however be in sustaining the innovation.

In addition to the pressure of sustaining innovation, companies have a pressure to be profitable in the competitive situation. This might cause a paradox where the costs are cut to a minimum, yet the innovative culture should flourish across the company. In addition, when savings are done wherever possible, companies might overlook the innovation potential of its organizations outside its Research and Development. However, some of the most successful companies encourage all their employees to innovate.

In any case, it is necessary for the company to clearly state its innovation program as meaningful part of the company’s strategic objectives. With this introduction, the objective of this thesis is to propose key actions how to enhance this innovation potential outside the R&D, even during an extended cost cutting program.

1.1 Business Context

The case company is one of the leading networking and telecommunications companies with over hundred years heritage of industry shaping innovations. For an ICT company being in business for such a long time it, has been able to make profitable business for a very long time. However, as in the introduction quote from CEO of Microsoft said, the industry cannot rely on its heritage. Therefore, the trick is to grow, stay profitable and produce highly innovative products and services.

The Telecom industry has changed from the days when the case company started as one of the first telephone manufacturers. In fact, nowadays it might not even be possible

for a corporation with a size of the case company to focus only on manufacturing telephones or other relatively simple products. Therefore, the portfolio of the case company and many other similar sized ICT companies have a portfolio of products, solutions, software, services and infrastructure from various different areas of ICT business. What's more, the companies might even set sights to business outside the ICT industry for further growth.

ICT industry has also been one of the pioneers and developers of services-dominant business. Some of the service business megatrends in the ICT field is for example to provide everything as a service, such as "software as a service" (SaaS), or "platform as a service" (PaaS) or "networks as a service" (Naas) (TEKES 2010). As a result, the ICT business is not only highly competitive but also highly complex.

1.2 Business Challenge, Objective and Outcome

The case company's centralized global Service Expertise Unit (SEU) supports its internal product development organization and company's operative market areas in service delivery to the company's external customers.

Innovating novel service delivery solutions lies at the very heart of SEU's existence. The organization has executed its Innovation program since 2011 and has been able to create track record of annual value up to 140 million euros. It consists of value generated by the sales of the new products and services but also from the operative efficiency savings with more incremental innovations.

Nevertheless, the continuing extended cost cutting programs and a series of organizational changes have disturbed SEU's innovation capability. In effect, this has led to fewer valuable ideas and longer lead times to realize the ideas. At the same time, the corporate wide Serviceability initiative, although still in development, calls for enhanced innovation capability. The Serviceability program aims for cutting the company's and its customers' operative costs by smart network operation and assurance solutions and by enhancing the customer experience in the process.

Therefore, the main objective of this thesis is *to propose the case company a list of key actions it should take to enhance the SEU's innovation capability.* In addition, a second-

ary objective is to update a draft version of the organization's existing Innovation Framework by reflecting these key actions into the framework together with some of the already working best practice.

1.3 Thesis Outline

The outline of the thesis is as follows. Firstly, the existing knowledge of the typical innovation barriers is studied. Secondly, the Current State Analysis (CSA) provides analysis of the organization's current capability to innovate. Thirdly, the Conceptual Framework (CF) is built from the literature review. Then, the proposal of the key actions is built and, lastly, the thesis is concluded with a validation phase where the final proposed actions and the updated framework draft are presented.

2 Method and Material

This section describes the research approach, data collection and analysis methods used in this thesis.

2.1 Research Approach

In this study an Action Research (AR) method was selected. Action Research is a methodology which dissolves the roles of researcher and the researched into a joint involvement with shared responsibility (Greenwood 1999:29). The researcher in this study is not only an employee of the case company in the case organization but also has roles of Innovator, Innovation Coach and an Innovation Driver, which are explained in Section 4.1. Because of this, the researcher obviously has a saying to the research issue but also will be biased. However, to mitigate the biased research the current state interviews and workshops have been conducted with a standard interview template and approach. Moreover, the proposal building is conducted together with the key stakeholders within the SEU's Innovation program.

However, the Action research approach is more than just a researcher working in the case company. The aim in the Action research methods is to make the change for the better by continuously learning and improving. Therefore, this action research concept should in the end be embedded to the proposal itself as a continuous learning cycle aiming to improve the situation in a cyclic manner.

To achieve this outcome, what's critical in the AR approach is that the data is gathered with the people having stake at the issue, analyzed by them, but also they are taken into action by them (Burns 2007).

As discussed, Action research is an iterative concept and in its classic and simplest form is known as action–reflection cycle of planning, acting, observing and reflecting (Lewin 1946) (find the original material). This can be extended as sequences of action-reflection cycles (Mcniff 2013:56). Figure 1 below shows the steps in the action research cycle.

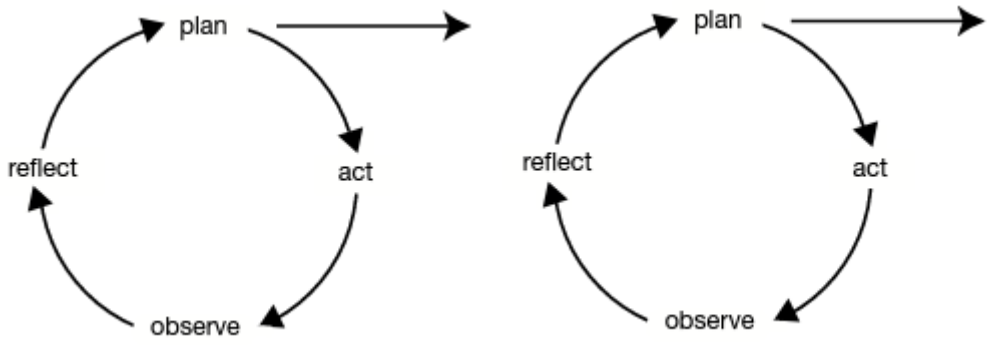


Figure 1. Sequences of action-reflection cycles (Mcniff 2013:57).

In the above illustration, the cycle of the action research concept starts with a preliminary diagnosis of the issue and planning the change. After the first phase, the plan is then implemented and taken into action. In the following phase, the actions are observed, and evidence is collected in order to analyze results in the final phase. The final phase is also a place to reflect the change and make reasoning for a new sequence of the cycle (Mcniff 2013).

In the scope of this study, the AR method is realized for one cycle, however as discussed, the goal is that the outcome of this study will be improved within the organization in an iterative fashion.

2.2 Research Design

In this study, the research is planned in five steps including two literature reviews. The objective of the research is to propose a plan for the key actions to enhance SEU's innovation capability and an updated innovation framework draft. This is the outcome of the last stage in the research.

Figure 2 below shows the research design of this study.

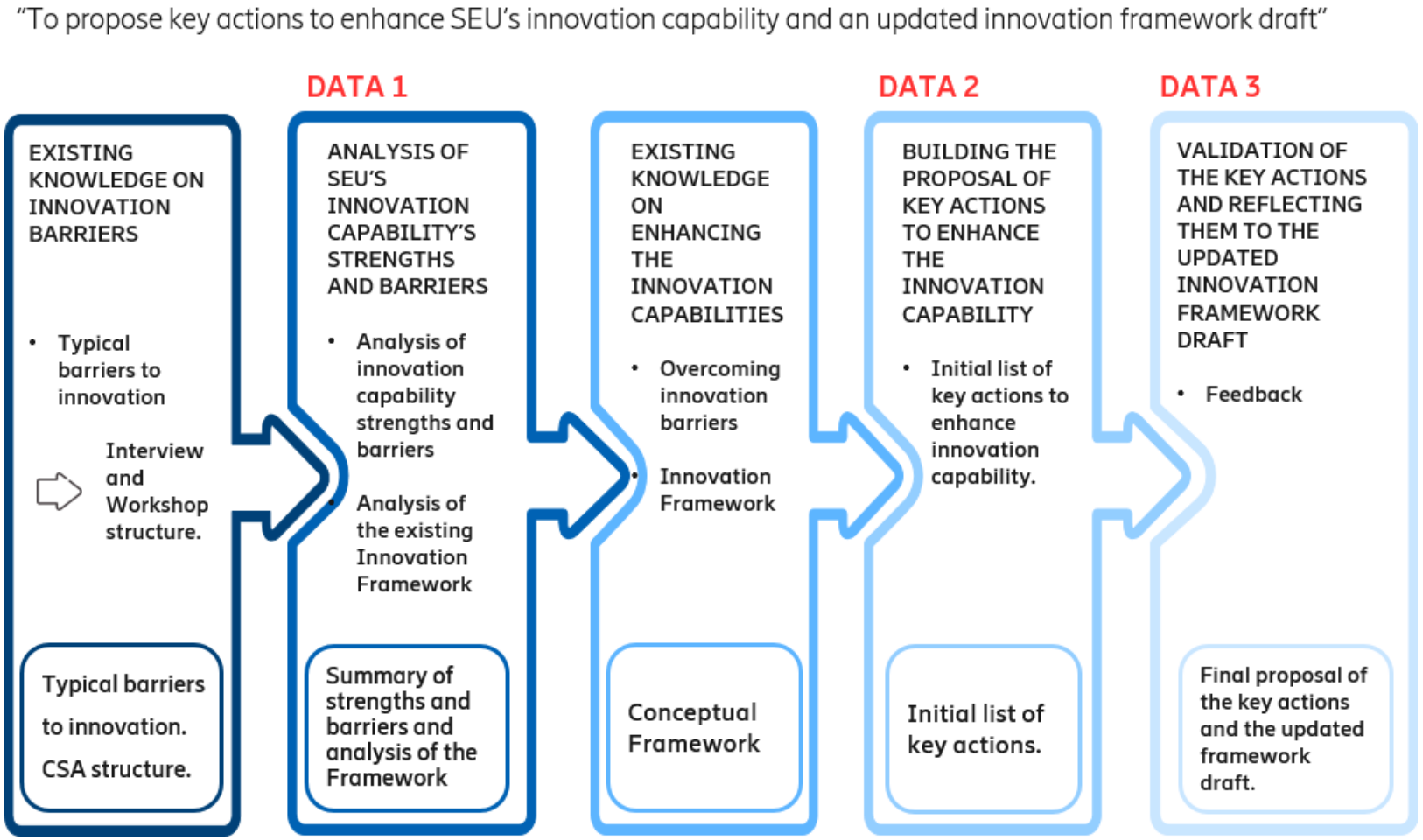


Figure 2. Research design of this study.

As seen in Figure 2, the first stage of is conducted for finding the structure for the following current state analysis. In fact, it was found necessary after a pilot interview outcome did not provide holistic information of the organization's innovation strengths and weaknesses.

After setting the ground for the interviews, the research proceeds to the current state analysis explaining the summary of strengths and barriers to innovation in the case company. Subsequently, the research returns to the literature review to find existing best practice for overcoming the innovation barriers in order to build the conceptual framework for the thesis.

The fourth stage, addressing the main objective for the study, builds the actual proposal of the key actions to enhance the innovation capability of the SEU organization.

Finally, in the feedback phase the initial list of key actions is presented to the stakeholders for a feedback. Furthermore, the outcome of the validation phase is the final key action list which is reflected to a draft of an updated innovation framework.

2.3 Data Collection and Analysis

The data collection in this study draws information from various sources including stakeholder interviews, workshops and discussions. Only qualitative was collected for the study.

Table 1 below shows the data plan and the main data sources.

Table 1. Data plan for the study.

	Content	Source	Informant	Timing	Outcome
Data 1 Current State Analysis	• Analysis of strengths and barriers • Analysis of current Framework	• Stakeholder interviews • Workshop	• Key Innovation Driver • Key Innovation Driver 2 • Innovation Coach 1 • Innovation Driver • Innovators	FEB 2018	• Summary of strengths and barriers • Analysis of the current innovation framework
Data 2 Building Proposal	• Initial Action plan for overcoming key barriers • Initial draft of Updated Framework.	• Stakeholder interviews • Workshop	• Key Innovation Driver • Line Manager • Middle level Manager • Innovators	MARCH – APRIL 2018	• Initial list of actions
Data 3 Validation /Feedback	• Feedback	• Stakeholder interviews	• Key Innovation Driver • Innovators • Line Manager	APRIL 2018	• Final list of actions and the draft Framework

Table 1 shows the data plan of the study with the informants selected. The informants were selected using triangulation to reach multiple sources of knowledge without the necessity of interviewing every single employee in the organization. Note that some of the titles are changed to secure anonymity.

The informants were selected by involving the key people who were part of the establishment of the innovation initiative, significant innovators creating a lot of value for the company, the innovators having hard time to innovate and the, key innovation coaches with long innovation experience and finally managers in charge. In addition, during the actual implementation of the data collection, few changes to the plan was introduced. Namely this was to find knowledge about the Serviceability initiative which was not the initial focus of the study. Thus, a Serviceability Champion was interviewed during the Current State and in the Proposal Building.

When conducting the interviews and workshops, the anonymity and confidentiality was discussed. Furthermore, in the data presentations any identifying characteristics from the job titles are removed.

The data collection of conducted interviews, workshops and other discussions were done by using field notes, meeting notes, whiteboard notes and audio recording where possible. The detailed information of the data collection is presented in Table 1 below.

Table 2. Details of interviews, workshops and discussions, in Data1-3.

	Participants / role	**Data type**	**Topic, description**	**Date, length**	**Documented as**
	Data 1, for the Current state analysis (Section 3 or 4)				
1	Respondent 1: Innovation coach	Telephone interview	Pilot interview for the CSA. What is innovation and what are the barriers of the current innovation framework.	Seb 2017, 1 hour	Interview notes.
2	Respondent 2: Key Innovation Driver	Skype interview	Strengths and barriers of current Innovation Framework.	March 2018, 3 hours.	Field notes and recording
3	Respondent 3: Key Innovation Program Driver 2	Skype interview	Strengths and barriers of current Innovation Framework.	March 2018, 1 hour	Field notes and recording
4	Participants 4-9: Innovator 1, Innovator 2, Innovator 3, Innovator 4, Innovator 5, Innovation Driver (researcher)	Face-to-face Workshop	CSA workshop with the part of the local team based in Finland. Strengths and barriers of current innovation framework.	March 2018, 1 hour	Field notes and recording
5	Respondent 10: Line manager	Skype interview	Strengths and barriers of current Innovation Framework.	March 2018, 1 hour	Field notes and recording
6	Respondent 11: Innovator	Skype interview	Strengths and barriers of current Innovation Framework.	March 2018, 25min	Field notes and recording
7	Respondent 12: Serviceability Champion	Skype discussion	Discussion to understand the objectives and process of Serviceability.	March 2018, 25min	Field notes and recording
8	Participants 13-17 Line Manager, Innovator, Innovator, Innovator, Innovation Driver	Face-to-face meeting	Discussion whether the innovators have customer pain points to share for the 5G Serviceability.	April 2018, 30min	Meeting notes
9	Respondent 18: Innovation Coach	Skype interview	Strengths and barriers of current Innovation Framework.	April 2018, 45min	Field notes and recording

	Data 2, for Proposal building (Section 5)				
10	Participants 19-21: Innovator 1, Innovator 2, Innovation Driver (researcher)	Face-to-face Workshop	Proposal building together with a few innovators of the local team based in Finland.	April 2018, 1hour	Whiteboard notes
11	Participants 22-24: Line Manager, Middle Manager, Project Manager	Face-to-face Workshop	Proposal building.	April 2018, 1h 15min	Whiteboard notes
12	Participant 25-26: Key Innovation Driver, Innovation Driver (researcher)	Workshop over Skype	Proposal building.	April 2018, 1h 15min	Whiteboard notes
13	Respondent 27: Serviceability Champion	Meeting over Skype	Discussion about innovation opportunities in Serviceability initiative.	April 2018, 30min	Meeting notes
	Data 3, from Validation (Section 6)				
14	Respondent 28-33: Line Manager, Innovator 1, Innovator 2, Innovator 3, Innovator 4, Innovator 5	Face-to-face Workshop	Validation, evaluation of the Proposal	April 2018, 30min	Meeting notes
15	Respondent 34: Key Innovation Driver	Final presentation over Skype	Validation, evaluation of the Proposal	April 2018, 1h	Meeting notes

As seen from Table 2, data for this project was collected in three rounds. The first round, collecting Data 1, was conducted for the Current State Analysis. The round consisted of pilot interview to test the interview design which consisted of only two questions: “What does innovation mean for you?” and “What are some of the barriers with the current innovation framework.” After the pilot, it was noted that the review structure needs to be grounded on commonly found innovation barriers based on literature. This interview model can be found from the appendices. Furthermore, the topics of the interview model was followed in the current state workshops as well. Interviews and workshops were conducted as a telephone call, Skype session or face-to-face workshop or meeting.

The second round of Data collection, for gathering Data 2, was conducted for the proposal building with face-to-face workshops or by having a workshop or a meeting over Skype. Finally, for the last round, the collection of Data 3 for the proposal validation, was conducted by face-to-face presentations or by presenting over Skype.

Additionally, for Data 1 the internal documents were analyzed which are listed below.

Table 3. Internal documents used in the current state analysis, Data 1.

	Name of the document	**Number of pages/other content**	**Description**
A	GCH Innovations - Ways of Working Rev D3	14 pages	Description of the first documented Innovation Framework.
B	Innovation Process Framework – Innovation Practice @ GPSO-GCD Rev C	22 slides	PowerPoint slides defining innovation processes and tools from the second Innovation Framework.
C	BNES GSO SEU-NS Collaboration & Innovation (C&I) Program Framework: 2017	10 slides	PowerPoint slides defining the third Innovation Framework

As seen from Table 3, this study also analyzed a number of internal documents for analyzing the Innovation Framework and innovation processes and tools used. As seen from the description field, the documents represent the information regarding first, second, and third Innovation Frameworks. The first framework was created when the organization was named as GCH, the second was created after organization change for new organization name GPSO-GCD. Finally, the third Framework was created after the organization name changed to SEU.

The findings from the current state analysis are discussed in Section 3 below.

3 Existing Knowledge on Innovation Barriers

This section discusses the concept of Barriers to Innovation approach and, in more detailed, explains Internal and External Barriers. The purpose for this section is to have a foundation of information for creating a focused research interview and workshop template structure for the current state analysis.

3.1 Innovation Barriers

Barriers to innovation is an approach in attempting to understand and overcome obstacles hindering the process of innovation. Furthermore, the barriers to innovation are not only issues that are either solved or not such a door opening or closing but can also be gradually overcome (Witte 1973: 14). Initially, the approach started as an attempt to record all the difficulties organizations encountered by innovation including those arising in industry itself (Piatier 1984: 142). Overcoming a difficult problem in a novel way is a series of collaborative and operative decision-making processes that does not naturally take place without proper structures and staff with a right mindset (Witte 1973: 13).

The barriers in the literature are often distinguished between internal and external barriers separating barriers originating within or outside the innovative process. Typically, the external barriers might arise from economic activities surrounding the innovator or even from the society as a whole (Piatier 1984: 142). However, in this research the focus is given to the internal barriers which can be easier affected. Following the approach by Hadjimanolis (2003), the internal barriers can be categorized in three different groups relating to people, structure or strategy.

3.1.1 People Related

Innovation barriers related to people can be further grouped in Perceptions, Skills and Personal goals as illustrated in Figure 3 below.

Figure 3. People related barriers.

As listed in Figure 3, the barriers related to people can derive from lack of willingness or skills or competencies of the staff to participate in the innovation process (Witte 1973). Furthermore, the barriers can be caused by the different perceptions including biases and lack of motivation. Lastly, the personal goals in terms of competence or company position might differ from the area of innovation making the personal expertise thus obsolete causing resistance (Gemuende 1998, according to Hadjimanolis 2003). This type of barriers makes one out of the three categories of barriers to innovation.

3.1.2 Structure Related

Similarly to the people barriers, also the structure related barriers can be further grouped into three sub-topics: Organizational structures, Cultural inertia, Political inertia. This division is visualized in Figure 4 below.

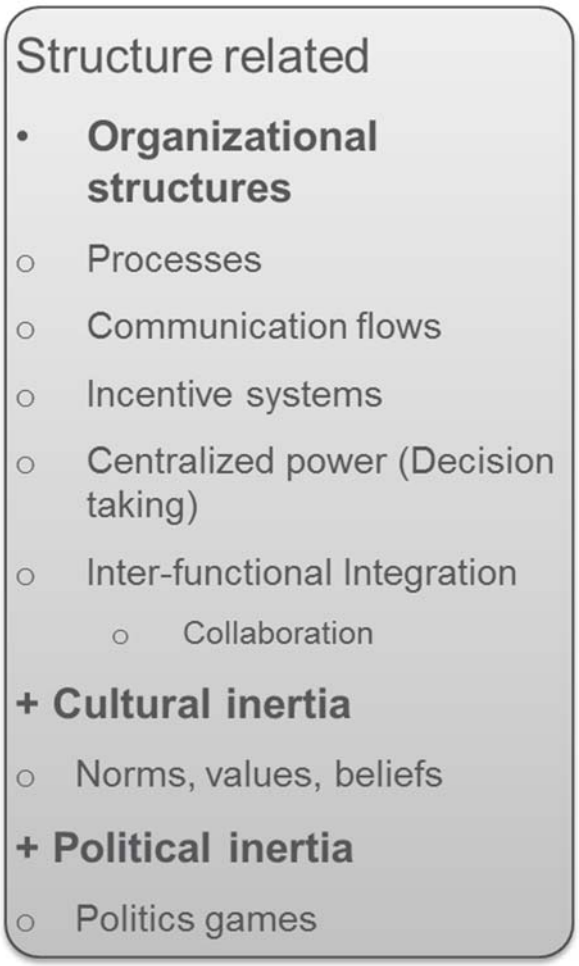


Figure 4. Structure related barriers.

As seen from Figure 4 above, processes are mentioned as a barrier category. Furthermore, the lack of proper communication can create obstacles to the innovation. One of the common topics with innovation is the incentives (Tellis 2012) which can cause problems when implemented wrong. On the contrary to the incentives, even punishments were sometimes discussed in relation to the lack of willingness to innovate (Witte 1973), or in terms of failed innovation which luckily nowadays are not advised (Tellis 2012).

The other topics identified as barriers and related to the organizational structures are, firstly, the centralized power which is seen a strength in old companies and barrier in new ventures (Koberg et al. 1996 according to Hadjimanolis 2003). Lastly, the lack of inter-functional integration, also called obstruction problems, can cause issues (Hitt et al. 1993). Example to this is a lack of vital collaboration between for instance marketing and R&D organizations (Hadjimanolis 2003).

Also, Cultural issues are mentioned in the Structure related issues, but they are very closely related to the people of the company. However, they have a structural in the sense that they are built into the company norms, values and beliefs which can have a long history in the company. Typically, innovation is either valued or not valued by the company culture, however in a large company there can also be different values in different organizations.

Lastly, Hadjimanolis (2003) groups political inertia, for example political games behind the power or decision making, under the Structure related barriers.

3.1.3 Strategy Related

Finally, the strategy related barriers are caused by a company strategic decision taking, its key capabilities or strategic resources. Figure 5 summarizes the strategy relates issues becoming barriers to innovation.

Figure 5. Strategy related barriers.

As seen from Figure 5, Strategy related barriers are one of the more common barriers (Hadjimanolis 2003). Competitive position is a topic where the company makes decisions to not pursue innovative ideas such as new manufacturing models due to risking the company competitive position (Lee 2000 according to Hadjimanolis 2003). This in turn is also related to the risk aversion tendency. Furthermore, the satisfaction to the current state of affairs or status-quo and the future uncertainty is one of causes of stagnation in a company. Laslty, the fear of cannibalizing successful current products is one of key constraints to innovation (Tellis 2012).

In terms of the strategical capabilities of the companies, Prof. Hadjimanolis (2003) mentions both the strategic company competencies but also the company support functions such as IT, Finance, HR, Communications or Legal department a source of potential innovation hindering barriers. For instance, the HR talent acquisition might not acknowledge creativity as a key skill for the employee.

Finally, the lack of available resources such as lack of funding, equipment or people (or their time) can cause barriers to innovation.

As described, overcoming the barriers to innovation starts with a structured analysis of the sources of the barriers. However, the next Section discusses the limitations in the barriers to innovation approach, namely the lack of structured ways in overcoming the barriers. Due to this limitation, a new method will be described and experimented in this thesis.

3.2 Analyzing the Key Barriers with “5 Why’s”

Even though the Barriers to Innovation approach provides understanding in different sources of barriers, its methods in overcoming them are limited to defining the importance and the impact of the barrier (Piatier 1984; Hadjimanolis 2003). Due to this lack of systematic way to overcome the barriers, and for further structuring the CSA interview and workshop data, this study experiments the use of simple “5 Why’s” method by Taichii Ohno (1998). Ohno used the method to find the root causes of the faults in the Toyota car manufacturer’s production system. In this thesis, is method is experimented in Section 6 to break down the barriers into possible root causes and which are then grouped and lastly used for drafting the initial proposal.

The 5 Why’s method is a simple but effective tool usually used in a troubleshooting situation to reveal the root cause underneath the symptoms such as in the example below.

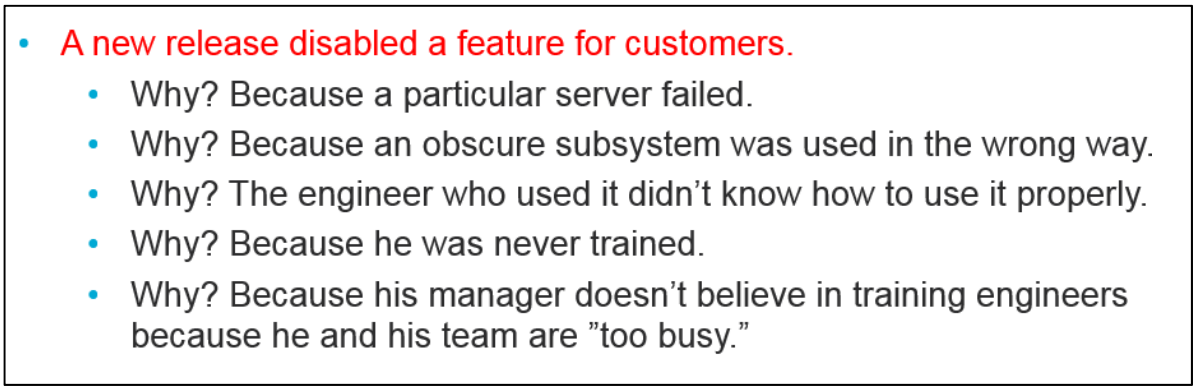


Figure 6. Example of 5 Why’s (Ries 2011:231).

Typically, this method can be used to find out why for example a machine stopped working but as the above example by Eric Ries (2011:231) is an example of when a technical issue turned out to be a managerial problem.

As seen from the example, the root cause alone is not the only learning but the whole path leading to it. Therefore, in Section 6 examples the findings bullet is used to summarize the whole process.

3.2.1 Rules and Recommendations of the 5 Why's Method

For the method to be used efficiently, Ries (2011) suggests that it is important to distinguish between symptoms and the causes. For the problem stated above, the first finding "Because a particular server failed" is a cause, but "There is an alarm in a server" would be an example of a symptom. Another key rule for the method is to narrow the problem down. Again, from the example above one could have started the problem with "Customer is not happy with the release" but making the issue more specific often brings better results. The issue with the broad problem can often be overcome by just asking "why" few more times. (Ries 2011). However, many times there might be too many possible answers to a broad question making it more challenging to go through all the paths. Nevertheless, as was found in this study this is often necessary

According to Ries (2011) A good recommendation when using the 5 Why's method is to do it together with the group having the issue, so that the different causes can be agreed.

3.3 Existing Knowledge and the Research Interview Structure

With the above categorization of people, structure and strategy related barriers an interview structure was formed to reveal not only the barriers but also strengths in the current state of the SEUs innovation capability.

4 Current State Analysis of the Innovation Capability of the SEU Organization

This section discusses the results of the current state analysis conducted within the SEU organization to understand the current innovation capability of the organization including the analysis of the current innovation framework.

4.1 Overview of the Current State Analysis Stage

To understand the current innovation capability of the SEU organization, a series of interviews and a workshop was conducted which are summarized in the Data 1 collection, Table 1. Even though the study is limited to SEU's innovation capability, some of the findings suggest issues outside the target organization especially when related to top management decisions or certain company mindsets having an impact to the target organization. This examination also included the analysis of the current innovation framework.

The current state analysis was conducted in four steps. First, the interviews and workshops were held, and the findings were summarized. Secondly, the key barriers were selected to be further addressed in this study. Thirdly, the analysis of the existing Innovation Framework and reflecting the found barriers into the existing Innovation Framework was conducted. And lastly, the current state analysis stage is concluded with the summary of the strengths and barriers of the SEU's Innovation Capability.

4.2 Findings from Data Collection 2

The interviews and the workshop were conducted with the logic and structure of the Barriers to Innovation method, however the structure also reflected the questions related to the interviewee's role, the team's setting and environment, used innovation process and finally, looking back to an innovation that was successful. Additionally, the method was used both to reveal the barriers and the strengths. For complete details of the interview structure, the template can be found from Appendix 5.

To reflect Barriers to Innovation categories, the findings are grouped according to the structure of the method, visible in its headings, namely the People, Structure and Strategy related findings as explained in Section 3 earlier.

4.2.1 People Related Findings

Following the Barriers to Innovation approach, the People related barriers are be grouped into Perceptions, Skills and Personal Goals related barriers. As discussed earlier, the current state analysis also uses the Barrier groups to reveal the strength areas. After the analysis was completed, the findings were identified in relation to Perceptions and Skills. Figure 7 below summarizes the people related findings.

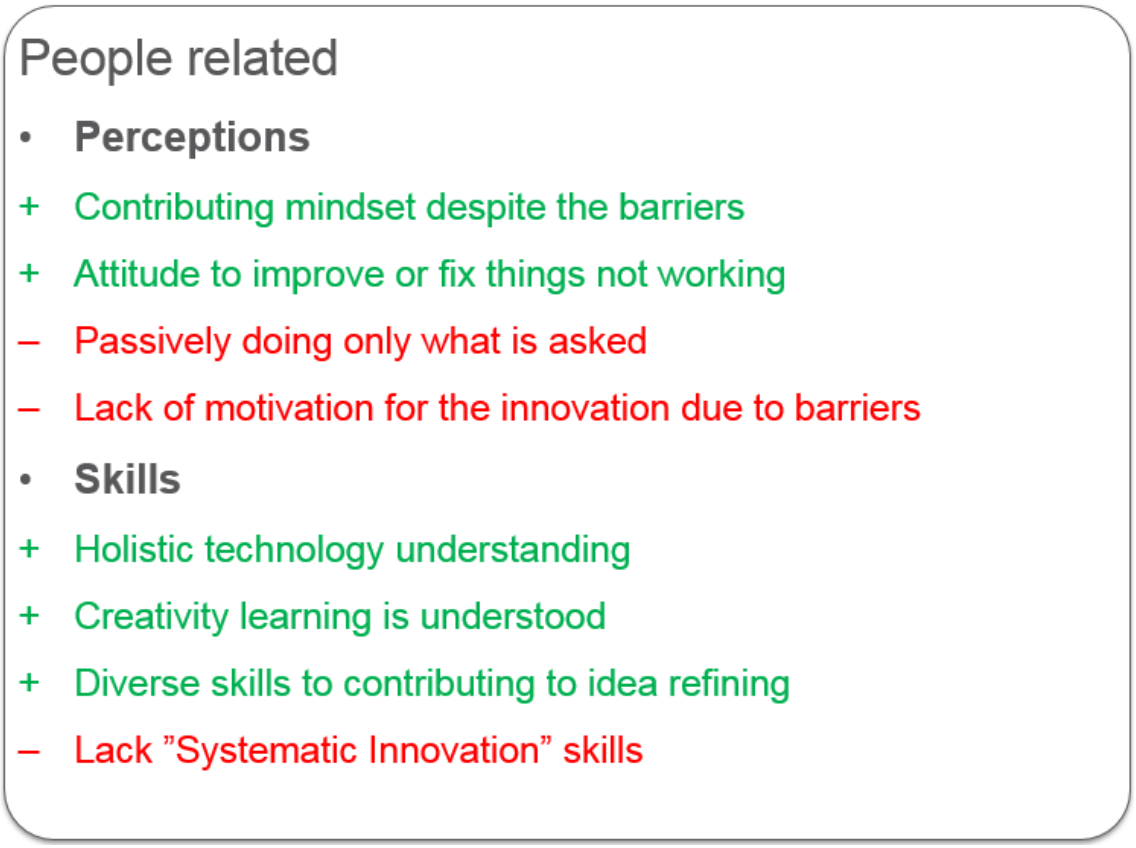


Figure 7. People related findings.

As seen from Figure 7, interestingly, the study did not find too many barriers with the employee's perceptions or skills, quite the contrary, only the "lack of 'Systematic Innovation" skills were emphasized in the interviews and workshop. The term "Systematic Innovation" is the name of the process used in the company to describe the path and respective tools from ideation up until the point when the realized idea is in use providing value for the company.

An important finding was found from SEU's team located in Spain who said that they found strength in what they call 'Innovation Workgroup'. This workgroup was used as a community learning practice to share the innovation related best practice and knowledge within the team. If a person, for instance, went to the Innovation Coach Training Program (ICTP) to learn the "Systematic Innovation" process and more, he was then teaching the most of it in the Workgroup to others.

In addition, the other two people related barriers were about the passive attitude and lack of motivation. Though these barriers are also important, they were thought to be a result of the continuing organizational changes and cost cutting programs.

These findings suggest that the people related barriers were few and the interviewees emphasized the strength that lies in the people working for the company as well as in the Innovation workgroup. They felt that the attitude was innovation-minded and said that the holistic technology understanding, and skills were high. One of the more important finding was that the diversity to solve problems in a new way is a strength within the company, and that the interviewees knew that the creativity is a skill that can be learned.

4.2.2 Structure Related Findings

When it comes to the company structures the findings suggest a strong opportunity to learn from especially the barriers related to organizational systems and structures. Figure 8 below summarizes the structure related findings.

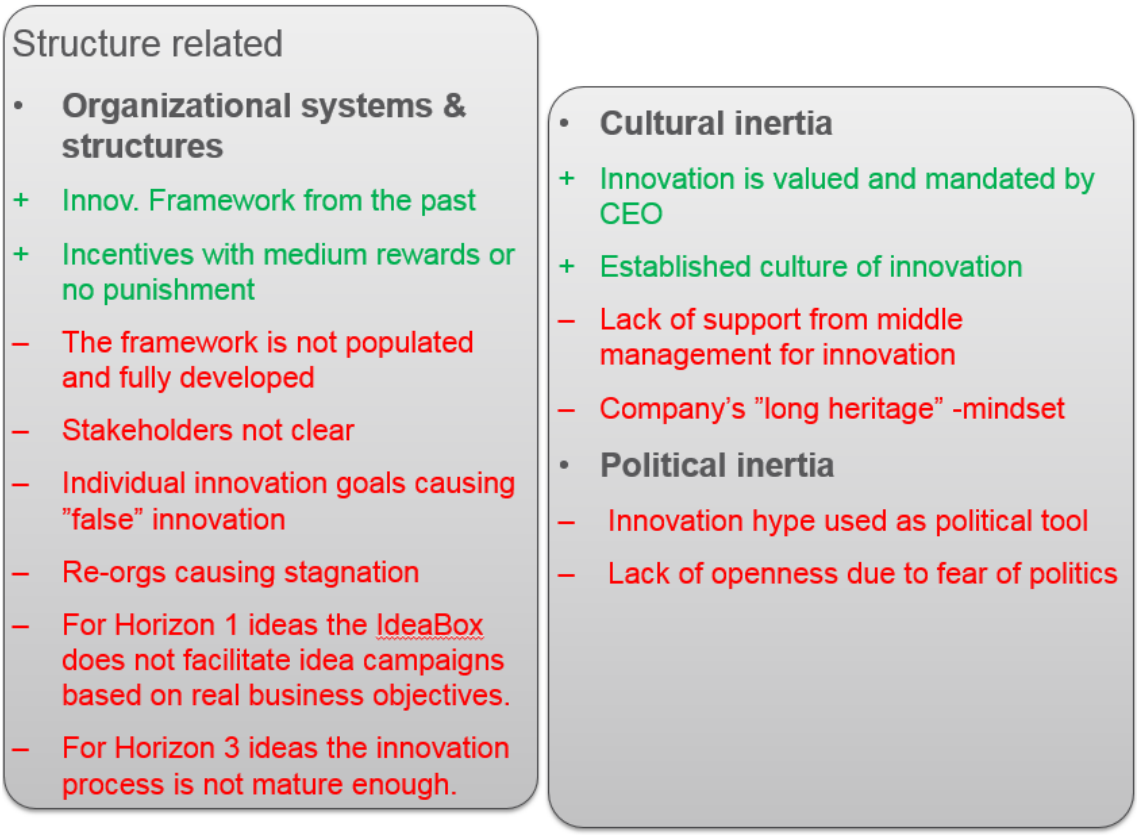


Figure 8. Structure related findings.

When looking at the findings in Figure 8, there was not much positive findings more than the Innovation Framework from the past and the Incentives, especially the monetary rewards after successful innovation. To explain more, the Innovation Framework had started to develop already in 2011 and although it had many iterations it was a strength that provided structure for the innovation initiative of the organization but it also was felt as unique that no other service organization had developed quite so far and for so long. In turn, this was felt as a key strength in the SEU’s innovation culture. What comes to the monetary incentives, the interviewees were quite in unison that the rewards were important to them. Only one mentioned that he sees not much benefit, of relatively small monetary rewards, due to the difficulties of creating a more substantial innovation success i.e. something that was sold to customers or was taken into use outside the own project or team.

As mentioned the barriers in the structure related topics were significant in number. One of the key findings that came to the person who was part of the team developing the current Innovation Framework, was that they did not have time to develop it to the extent that they wanted. In specific, the interviewee mentioned that they lacked the structural

link between the company strategy and the innovation initiative implementation. What's more, the framework was never thought to be fully populated to all parts of the organization.

One of the more commonly mentioned barrier was that the stakeholders were not clear. Especially, when it came to find a person with a mandate to consider the idea to be developed was found very challenging if not almost impossible.

In terms of Innovation performance management, the KPIs were found to be a burden and even asking the wrong things. Some of the people mentioned that they can easily make one or two ideas generate some value and therefore meet the individual targets but when the idea value was put under a critical lens, many thought they never generated much value, if nothing, after the development cost.

Two important findings were related to the types of innovation, especially in so called Horizons, and which type of challenges was met. The innovation Horizons is a term (find source), that proposes where the innovation fits in the company portfolio. This concept is explained further in Section 5. In terms of Horizon 1 innovation the interviewees mentioned that the IdeaBox, a tool in the company to submit and follow-up the ideas, did not have ideation campaigns with clear business objectives with a development funding for the voted best idea. Then what comes to Horizon 3 ideas the interviewee said that the organization did not have mature process implemented to meet the challenges in ideas with very high risk.

Regarding cultural aspects of the innovation structures, the study findings suggest that while the CEO was seen as an ambassador for the innovation the middle management did now provide sufficient support to meet the CEOs ambitions. To make the contrary even further the interviewees thought it was not a good idea to have individual innovation tied performance goals but at the same time not finding the management being able to take the good ideas further. Another cultural issue was seen with the company's mindset caused by its long heritage of being very old company. It was seen as a burden for innovation because of many people being assured of company's future due to it has "always been there", as stated by a person in the interview.

Lastly, the political inertia was felt strong in the sense where the management uses the innovation "hype" as a reason not to set any targets for the innovation. As mentioned in

Section 1, the organization is in turmoil where new targets are still developing, and it was not clear if the innovation program will have future or not. Last barrier mentioned, is the "lack of openness due to the fear of politics". This barrier was related to knowledge and insight sharing, where the interviewee felt that he will not share his best ideas until he has made sure that the ideas will be developed via his personal connections and that he will the key person in the development. What caused this to be a barrier for him was that he saw the politics making the ideas to be either killed with slow progress or by false decisions or then to be taken to another site for development leaving him out.

4.2.3 Strategy Related Findings

The last group of findings consist of Strategy related topics categorized further into Strategic decisions, company strategic capabilities and resources. Especially in the Strategy-category, the findings often concern the whole company and not only the target organization. In this case, only key findings are studied further which is explained in the next sub-section. Figure 9 below summarizes the strategy related findings.

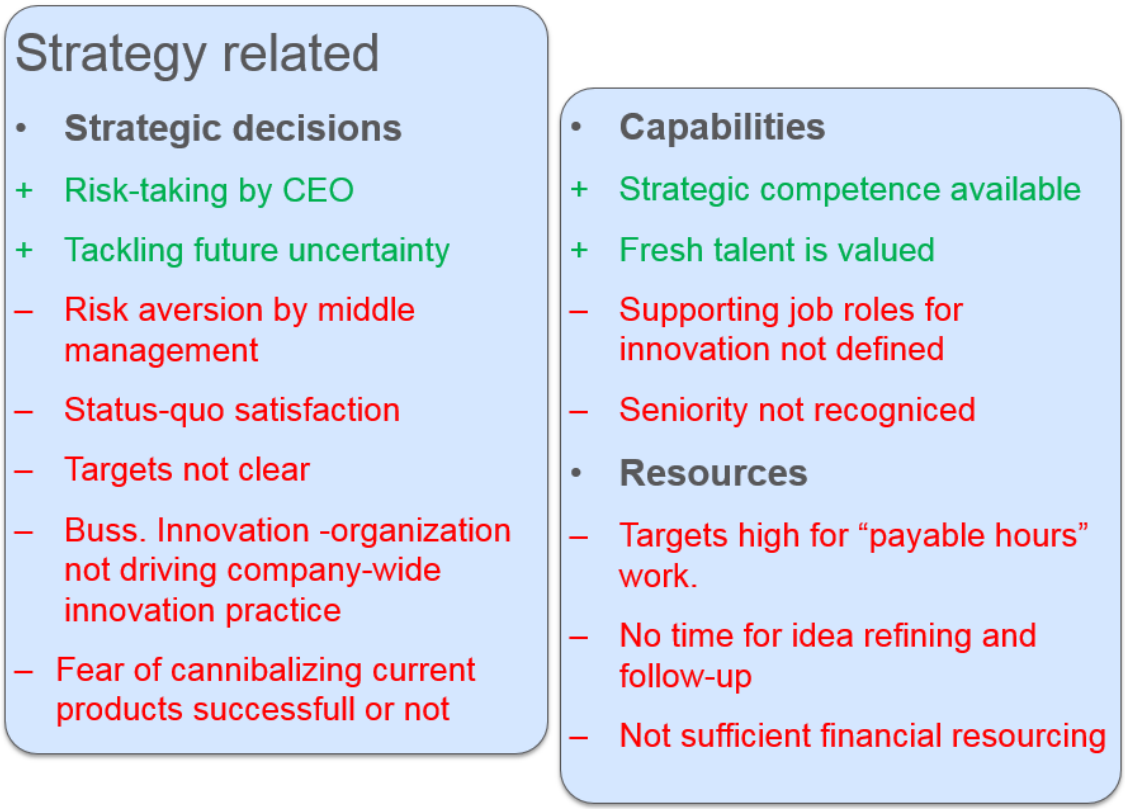


Figure 9. Strategy related findings.

As seen from Figure 9, the strategy related findings suggest there is a risk-taking attitude from the CEO, but this was not seen the case with the middle management. One of the interviewees speculated that the middle management either have pressure from the cost cutting or then the top management ambitions do not populate down to middle management for some reason.

The positive finding related to the lack of fear caused by the future uncertainty. In fact, the interviewees mentioned that the company was quite skilled in handling that issue.

One of the key findings from the Strategy related findings was that the SEU's targets were not clear. In the interviews this had multiple meanings. One of the findings was that the strategical objectives for the organization was not clear. For this finding, one of the reasons said was the recurring organizational changes. Furthermore, the lack of KPI targets related to innovation was not clear. This was probably due to the new initiatives of Serviceability and Automation being still in development. Lastly, the target not being clear was discussed as not being sure of what to innovate. The typical realized innovation from the team in concern was an efficiency improvement by a small tool or a script. However, if the team was not sure if they should come up with more ambitious ideas and what would be the scope.

On a larger scale, the findings suggested there was no company-wide Innovation framework or practice implemented and it was discussed that the Business Innovation -organization and their Chief of Innovation should have this as a clear responsibility. However, the reasons for this not to be in place was not so clear.

In terms fear of cannibalization of the current products or services with new innovations, the findings suggest this being a concern even whether the existing offering was successful or not. So even though the SEU innovators had the right mindset for the innovation and fixing broken things, the company decisions did not prove that being true.

With respect to the strategic capabilities of the SEU, it was seen that the organization had the strategic competence needed and that the fresh talent is valued. On the other hand, the seniority was not seen as an asset in the company overall. In terms of supporting functions and capabilities, it was found that the supporting job roles for the inno-

vation program were not defined by the HR. These types of roles would include for example Innovation Coach or Innovation Driver which do not exist as an official job role but just a responsibility someone had volunteered to take.

The findings in the last Strategy related sub-category, Resources, suggest there are no time to follow-up the ideas, which was speculated to be caused by the other barrier “targets high for ‘payable hours’ work”. What this means is that the work bringing no money for the company such as administrative work, or this case innovation follow-up, was not seen of much value or was even not allowed more than for few hours. The innovators explained that they used their project hours for innovation refining.

Finally, the last finding, and which also emphasized most likely causing many other issues, was the lack of sufficient financial resourcing for the innovation. The findings further revealed that the organization does not have dedicated budget for funding the development of the ideas, but the funding is organized case-by-case from different sources.

4.3 Key Barriers to Innovation

Several selected key barriers were analyzed further, with the selection made from the findings identified and discussed above. It should be noted that all the barriers should be eventually dealt with in the organization, however, with the scope of this study, only key barriers were selected.

Figure 10 below summarizes the key barriers to innovation selected for further investigation.

Figure 10. The key barriers to innovation.

The key barriers listed above in Figure 10 were selected by removing some of the barriers that were considered a result or an outcome of some of the other more important issues. As for example, the motivation issue was seen caused by many of the other barriers. Other filtering applied was the ability to influence on the barrier. As an example, the status-quo satisfaction barrier was estimated to be very difficult to change. Third filter was just to remove barriers that were not directly tied to innovation, such as seniority not being valued in the company. This for sure could and should be addressed but due to the constrains of the thesis scope, this filter was needed to be applied. Last selection filter was again related to the scope of this thesis, namely with regards to the Horizon 3 process maturity barrier. Defining process for Horizon 3, i.e. radical and even disruptive ideas, was considered requiring a scope of a full thesis in itself.

4.3.1 Key Barriers Grouping for Conceptual Analysis

To continue the study, the found selection of barriers are re-grouped with new headings which better describe the topic. This was also needed for scoping of the literature review.

Throughout the study, these groups are referred in this study as four different barrier topics. Figure 11 lists the key barriers into the new headings.

1. Existing SEU's innovation framework is not populated and fully developed

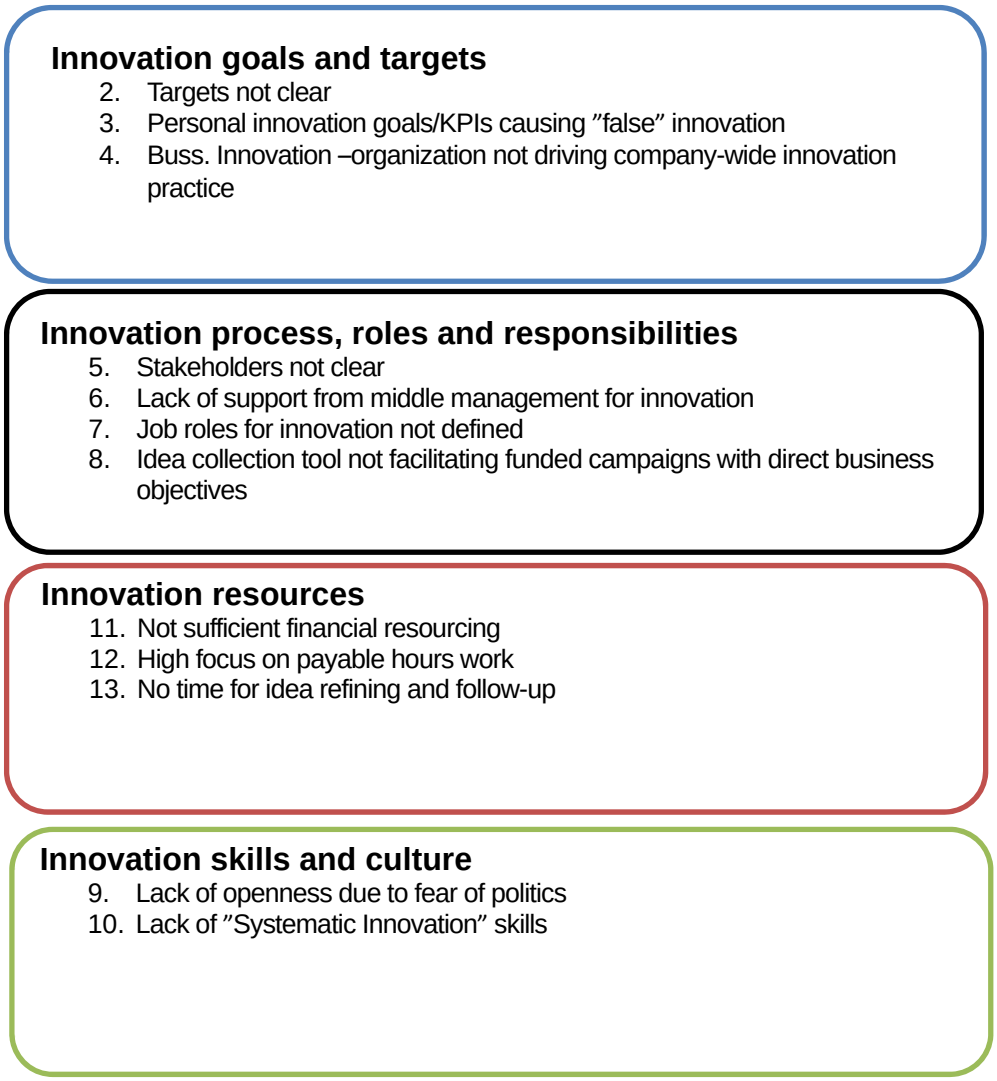


Figure 11. Re-grouped barriers.

As seen in Figure 11 above, 13 different barrier findings were selected as the key barriers to innovation in SEU. Note that what's pictured on top is the first barrier, “The framework is not populated and fully developed”. This existing framework will be further analyzed in depth in the next section. However, what comes to the framework not being fully populated, it is considered in this thesis to be a result of the barriers found from the framework itself and will not be studied further.

4.4 Existing Innovation Framework and its Weaknesses

As stated in the earlier Section, one of the key barrier mentioned was “the Innovation Framework is not fully developed and populated.” In this sub-Section the existing Framework explained and the found key barriers are reflected to the Framework.

4.4.1 The Existing Innovation Framework

The existing Innovation Framework in the SEU organization was first developed in 2011 when the organization had a different name. However, this 2011 framework is still relevant since the innovation initiative was widely started at that time. After this, there has been two larger iterations of the framework due to yet more organizational changes. Despite the changes, the framework itself has had very few changes. The main changes are introducing filtering and decision paths for the ideas, i.e. creating structures to move good ideas further towards the management for them to make decision, introduction of Lean Startup methods and finally introduction of collaboration targets.

However, the latest complete framework from 2017 is presented below in a simplified Figure 12. It should be noted that, as discussed earlier, there is a new Serviceability initiative being developed but during the current state analysis it was still un-clear if the below Innovation Framework will be part of the initiative.

Figure 12. Existing Innovation Framework of SEU.

As seen in Figure 12, the Framework consist of nine different topics. It starts by defining objectives for the innovation and setting the performance goals for it. In the current Framework the scope is very wide accepting all kinds of innovation initiatives. Furthermore, the KPIs are set for the whole organization, each Domain, their respected Sub-Domains and down to the employee level.

Next, the whole initiative is mandated by the SEU's Leadership team. The topic 3 concerns the Funding, Resources and Time or manhours. In the current framework the Domain Drivers can use 15% of their time for innovation and the Prime Driver 50% of his time. However, there is no dedicated budget for innovation. It is un-clear from the Framework how the ideas get funded, but by experience and the data from the interviews, the ideas require a lengthy "case-by-case" process of finding the budget. In practice the funding is mostly manhours for developers. In most cases, the budget is found from the Product Development Units within the R&D Organization.

Regarding the processes within the framework, the “Systematic Innovation” process is defined. This process definition is not dealt with in more detail in this study, mostly because of the limits of the thesis scope but also since all the interviewees who knew about it thought it was a very good process for ideation, idea refining, and further tools for idea presentation and all the way to commercialization. The processes part includes also methods of quantifying or “valuating” the successful innovations. Thus, the “Systematic Innovation” process does not need any immediate improving.

The tools defined in the framework consist of mainly the “IdeaBox” tool for idea submission and follow-up, including the idea quantification or valuation follow-up. The other major tool is so called “Lean Business Canvas” which is a Lean Startup (Ries 2011) template for business model development.

Further in the framework, the roles and responsibilities are defined. It mainly consists of defining the Driver-roles of the whole initiative and of each Domain. As seen from Figure12, the Prime Driver is responsible of the whole framework towards the SEU Leadership team. He also develops the Framework itself, creates new initiatives and leads the workgroup consisting of the Domain Drivers. Respectively, the Domain Drivers are in charge of the innovation within their Domains and report the Performance results towards the Prime Driver. Lastly, the local coaches help the innovators with any issues during the innovation process. If they can’t help, they turn to the Domain Driver.

The Incentive process defines the monetary rewards and the less used non-monetary recognition awards. Next, the Reporting and Workgroup is used to discuss best practice, promote success stories such as successful ideas and defines practical ways to report the innovation performance of each Domain.

Lastly, the framework addresses the innovation culture and how it should be promoted and developed. This mainly consist of the competence build-up of the “Systematic Innovation” process in a “Innovation Coach Training Program”, facilitating idea brainstorming sessions and other innovation related events and, finally, promotion of success stories and best practice in newsletters.

4.4.2 Barriers Reflected to the Existing Innovation Framework

After analyzing the existing innovation framework in detail in the previous sub-Section, the key barriers were reflected to the framework as shown in Figure13 below.

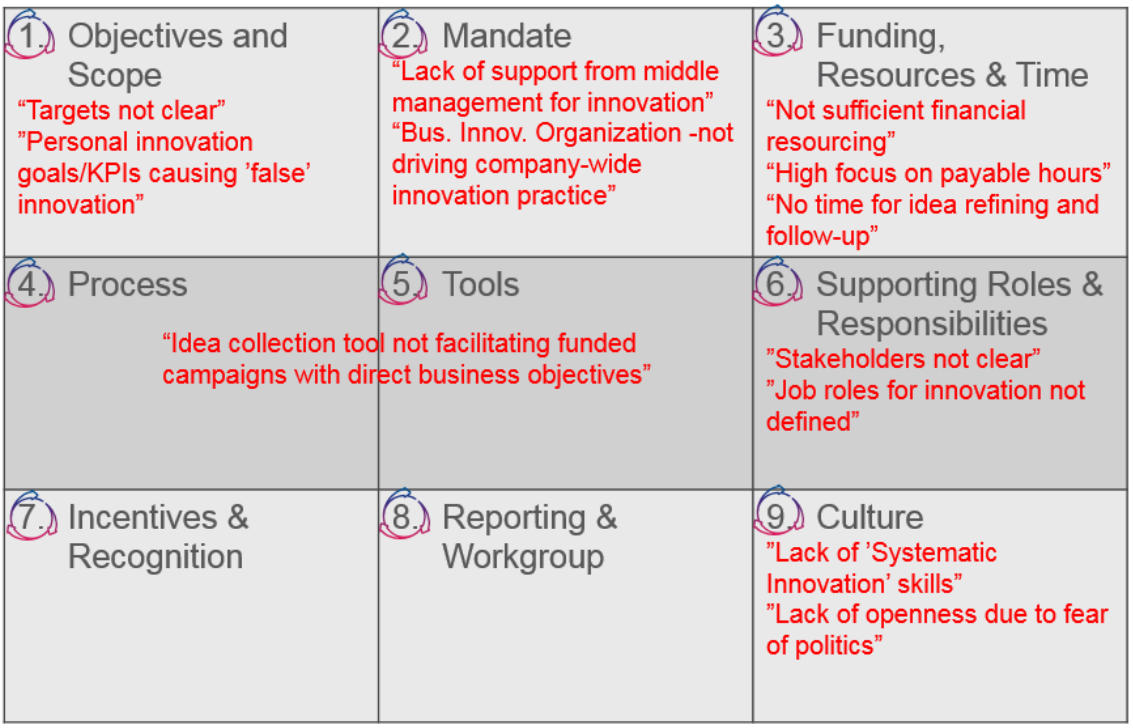


Figure 13. Barriers reflected to the current Innovation Framework.

The barriers in the framework shown in Figure 13 were already discussed in the earlier sub-section and do not need further clarification in this context. As seen from Figure 13, the barriers relate to almost every part of the Innovation Framework.

The existing Innovation Framework has a tremendous value for the SEU organization and it should be valued more in the company. As learned in the current state, it has a lot of strengths which in later stages of this thesis will be included in the updated Innovation Framework draft.

However, before it can be done the above presented barriers need to be eliminated. That will be the topic of Section 6 and 7, i.e. the proposal building and proposal validation.

4.5 Key Findings from the Current State Analysis (Data Collection 1)

The current state analysis stage provided understanding for the key barriers to the innovation described in detail in Section 4.3. In this section, the barriers found were grouped under four barrier topics related to 1) Innovation goals and targets, 2) Processes, roles and responsibilities, 3) Resources and 4) Culture.

Despite the 13 found barriers, the study found also many key strengths of which the employees' attitudes and skills were some of the more emphasized ones. In addition, the learning in workgroup communities was emphasized.

Finally, the stage explained the existing Innovation Framework and reflected the found barriers into the Framework itself.

In the next section, existing literature knowledge is studied to create the conceptual framework to understand how the academic literature and other ICT companies overcome these found barriers, and to guide the proposal building in this thesis.

5 Existing Knowledge on Enhancing Innovation Capability

This section discusses existing knowledge from literature on enhancing the innovation capability of a company. This is conducted to form a conceptual framework for the proposal in the next section. First, the review makes introduction to Business Innovation and Innovation Governance. After this, the literature review focuses on the barrier topics described in Section 4.3.1.

5.1 Introduction to Business Innovation

Innovation in the business context has across its history been described in various ways. In fact, there is no commonly acknowledged definition. However, in most cases definition of the innovation itself addresses novelty and value. With regards to the novelty, the idea has to solve the problem with a new way. However, should the idea be novel as in never before seen anywhere, is not widely agreed. What comes to the value of idea can be seen as innovation only once it creates value for the company. In this section, the innovation types are discussed as well as the definition which is adopted for this thesis. Next, the innovation novelty is discussed and finally, how companies manage their innovation portfolio to understand the risk for more ambitious innovations.

5.1.1 Different Areas of Innovation and Innovation Definition

Business innovation can also further be grouped into different types of business it tries to innovate upon. Some of the more common areas suggested by the literature are product innovation, service innovation and process innovation (Smith 2006). However further common areas of innovation are technology innovation (find source), social innovation (find source) or business model innovation (Cantamessa et al. 2016).

In this thesis, the following definition of innovation by Marina du Plessis (2007: 21) is adopted:

> *“Innovation as the creation of new knowledge and ideas to facilitate new business outcomes, aimed at improving internal business processes and structures and to create market driven products and services. Innovation encompasses both radical and incremental innovation”*

The above citation defines innovation in a precise manner emphasizing the value of innovation for the company as well as the different types of innovation in terms of their novelty or area of innovation, as in radical or incremental innovation or process, structures, products and services.

5.1.2 Innovation Novelty

Innovation, as defined in this thesis, must incorporate novelty and value. In order to define the novelty, the innovations can be grouped in either incremental or radical innovations where the incremental innovation improves the current offering and where the radical innovation creates a whole new offering. However, for Henderson and Clark (1990) this was not enough since they wanted to understand whether the innovation solved only parts of the product, what they called components, or the whole product, what they called systems. To facilitate this, they introduced two more types of innovation to address the innovation novelty: modular and architectural. First, the modular innovation creates new components but does not make change to the whole system. Then, the architectural innovation not only improves the existing components but also creates new configurations of architectures for the whole system itself.

Figure 14 below illustrates the innovation novelty types according to Henderson and Clark (1990).

Innovation	Components	System
Incremental	Improved	No change
Modular	New	No change
Architectural	Improved	New configuration/architecture
Radical	New	New configuration/architecture

Figure 14. Innovation novelty types as defined by Henderson, R.M. and Clark (1990).

Going even further with the novelty the innovations can be called “disruptive”. This definition by Bower and Christensen (1995) alleviates the industry shaking or disrupting nature of the innovation. Typical example of such innovation is the Apple iPhone which disrupted the whole smartphone industry, led by few giant corporations, to move towards touch screen smartphones having no stylus. Moreover, the iPhone was introduced by a company not even making cellphones before the disruptive new offering.

5.1.3 Managing the Innovation Portfolio with Innovation Ambition Matrix

The Innovation Ambition Matrix proposes a way to find the correct ambition to your innovation (Nagni and Geoff 2012). The innovation is categorized in three sections of “Horizons”, the “core innovation” or Horizon 1 optimizing existing products for existing customers. Secondly, “adjacent innovation” or Horizon 2 expanding from existing business into “new to the company” business. And finally, to Horizon 3 the “transformational innovation” developing breakthroughs and inventing things for markets that do not yet exist.

Figure 15 below illustrates the Innovation Ambition Matrix by Nagni and Geoff (2012).

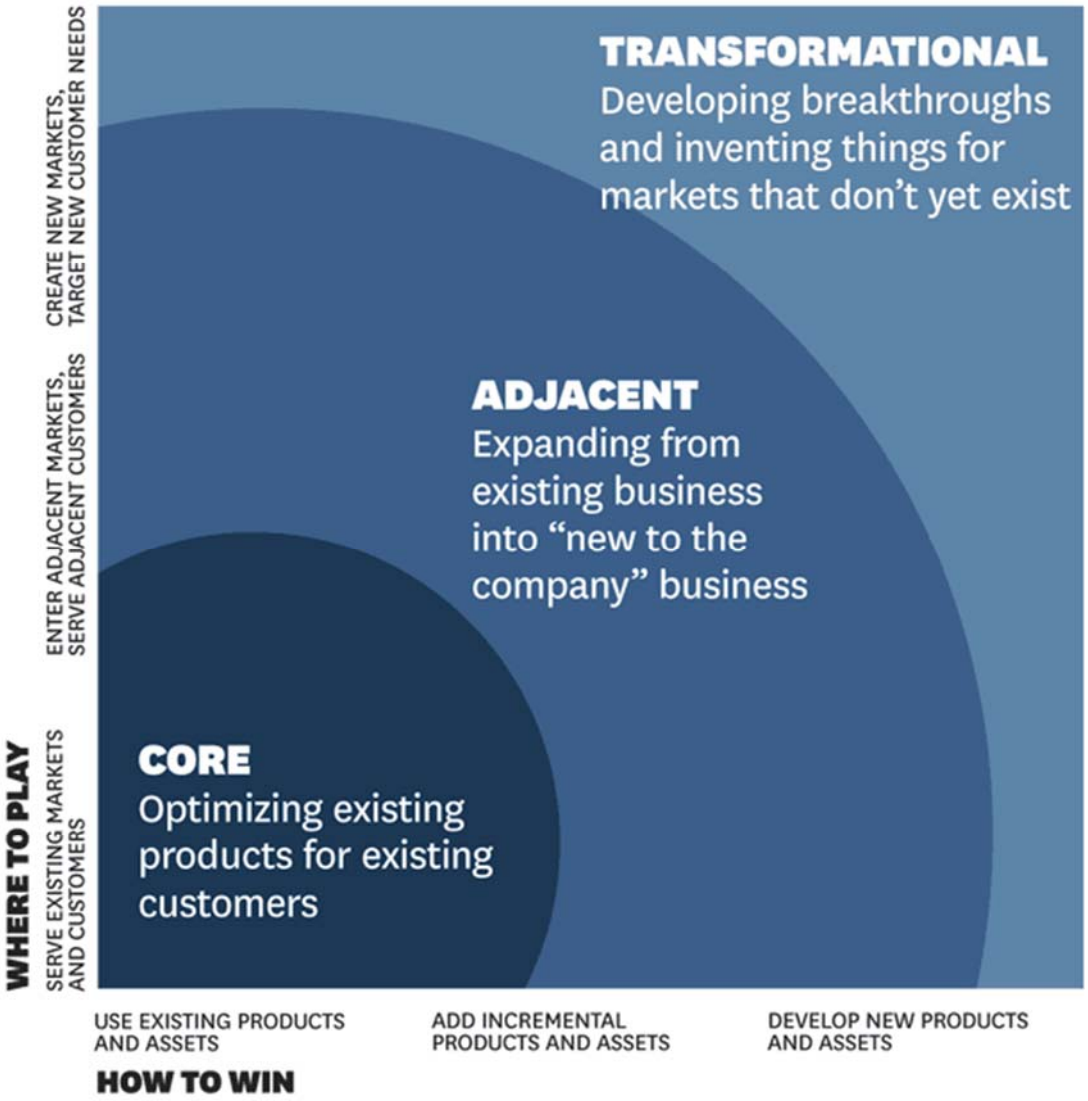


Figure 15. Innovation Ambition Matrix (Nagni and Geoff 2012).

As seen in Figure15, with the core services the company uses their existing services, products or assets to serve the existing markets and customers. Then, with the adjacent services the company adds incremental services, products or assets and enters the adjacent markets and serves the adjacent customers. Finally, with the transformational services the company develops new services, products or assets and creates new markets and targets new customer needs.

The interesting takeaway of this tool lies in the word ‘ambition’, since in the concept the more ambition the innovation pursues, i.e. moving from Horizon 1 towards 2 and 3, the greater the risk is to the company to pursue the opportunity (Nagni and Geoff 2012). Therefore, in order to mitigate these risks, it is first important to understand which Horizon the idea belongs to.

5.2 Introduction to Innovation Management

To analyze the ways of overcoming the innovation barriers, a basic understanding of innovation management is required. Managing innovation requires comprehensive definition of how the company sees the innovation as a vital part of its competitive advantage and growth, how it identifies and develops the opportunities, and ways to make it all sustainable (ISO 2014). In this section innovation management structures are under discussion, as well as more operative level simplistic structure of innovation framework. Lastly, different business innovation networks are introduced.

5.2.1 Towards Standardized Definition of Innovation Management

Despite the necessity of having a comprehensive innovation management system, the organizational management research does not provide widely adopted best practice for building such a system, but the studies regularly come to different conclusions (Sattler 2011). In the aim of creating a standard set of definitions for innovation management the International Organization of Standardization (ISO) has under development an ISO/CD 50501 standard. However, there are also standard available from European Committee of Standardization (CEN) which covers Innovation Management in following topics (CEN/TS 16555-1:2013), as listed in Table 4 below.

Table 4. Innovation Management topics as defined in (CEN/TS 16555-1:2013).

Innovation Management topics
1. Innovation Management System 2. Strategic intelligence management 3. Innovation Thinking 4. Intellectual property management 5. Collaboration management. 6. Creativity management. 7. Innovation management assessment.

As seen from Table 4 above, the innovation management has a broad set of topics which are not further analyzed here.

However, one of the interesting topics in the CEN standard above is the “Innovation Management System” which is pictured in Figure 16 below.

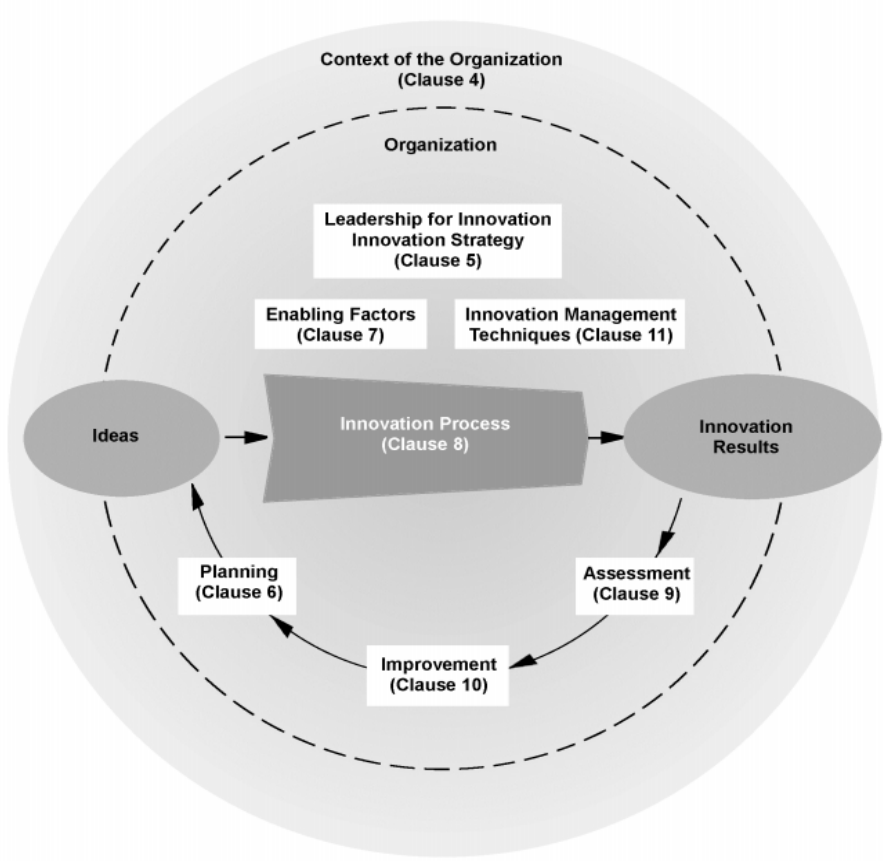


Figure 16. Key elements of Innovation Management System (CEN/TS 16555-1:2013).

The Innovation Management system, as shown in Figure 16, defines the comprehensive innovation management requirements. These include defining the organizational context for the innovation, defining the innovation strategy, how the ideas are identified and developed and finally brought to market, and lastly, how to make the whole culture sustainable (CEN/TS 16555-1:2013).

One of the findings from Deschamps & Nelson (2014), in their study on the challenges of Innovation Management, was that in only few companies the management to thought carefully the “governing” functions of the innovation management practice. These “directing” functions are necessary for stimulating, steering and sustaining the company innovation activities. Deschamps & Nelson (2014) propose following list of actions quoted directly from the study as shown in Table 5 below.

Table 5. Defining Innovation Governance (Deschamps & Nelson 2014:28).

Innovation Governance functions
• defining roles and ways of working around the innovation process; • defining decision power lines and commitments on innovation; • defining key responsibilities of the main players; • establishing the set of values underpinning all innovation efforts; • making decisions that define expectations; • defining how to measure innovation; • making decisions on innovation budgets; • orchestrating, balancing, and prioritizing innovation activities across divisions; • establishing management routines regarding communications and decisions

When analyzing the above list, it can be noted that some of the actions are more operative requirements such as the roles, responsibilities and processes, however most of the actions are directive by nature. Although this thesis will not analyze all these action in detail, it will in next Section have a look at the more operative level requirements for successful innovation structures called innovation framework. These structures are important in the daily operations whereas the directing or governing actions can be differentiated from it.

A key requirement for the governing functions from the study by Deschamps & Nelson (2014) is the proposal that these should be the role of the C-level top executives or other

subset of top management and should not be delegated to lover level management. What's more the interest to the innovation of the designated innovation top management "board", maybe the company management board, should not have only interest in hearing the outcomes of the innovation but the explicit interest in the governing functions. In one of the models described in their study they also mention that a group of innovation champions, or innovation enthusiasts or sometimes referred as 'intrapreneurs', can act as a supporting the primary governing team, helping mostly in the innovation processes and practice with their personal experience.

5.2.2 Innovation Framework

As discussed above, the Innovation Management System is a comprehensive set of structures defined with a purpose to aid the innovation within the company. There is however, a simpler way of defining these practice that is more on the operative level to better describe the immediate processes that the innovators care about. This can be called "Innovation Framework", also illustrated in Figure 17 below.

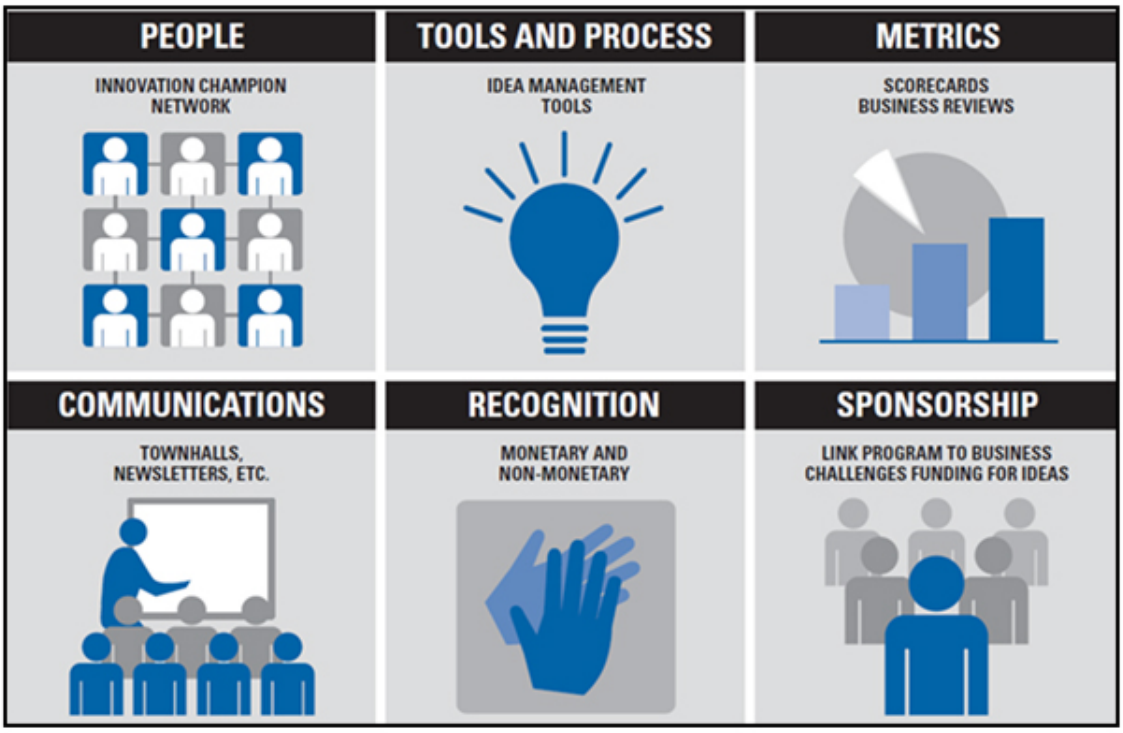


Figure 17. Motorola key components of the Innovation Framework (Hattendorf 2014).

In the Motorola Innovation Framework, shown in Figure17, six key components are identified, from which the Innovation Champion Network is the first one. It consists of handpicked innovation enthusiasts within the company with broad innovation experience and personal connections. Next, tools and processes are defined for idea collection and development. Next business scorecards are used to measure the innovation with metrics such as number of adopted innovation and their business impact. Further on the framework are communication best practice for innovation success stories and followed by monetary and non-monetary recognition practice for successful innovation. Lastly, is defined the ways to funding especially with Motorola the idea challenges are funded by the business lines. Hattendorf (2014) from Motorola also describe that their innovation network is formed in hub-and-spoke way around the Chief of Technology Office which has the governing authority.

5.2.3 Framework of Business Network Renewal

In today's business networks the emphasis is increasingly in the co-creation of business renewal and new opportunity identification. Hyötyläinen et al. (2011) illustrates a Framework for business renewal through different networks that they base on earlier research (Doz 2011; Eccles, 1981). The Framework defines different models of co-creation networks in a matrix based on the network's complexity and business focus. The former is described in bilateral or multilateral relationships and the latter in Exploitation, i.e. using the existing knowledge or Exploring, i.e. searching for new knowledge.

Figure 18 below shows the Framework of Business Network Revewal (Hyötyläinen et. al. 2011: 30)

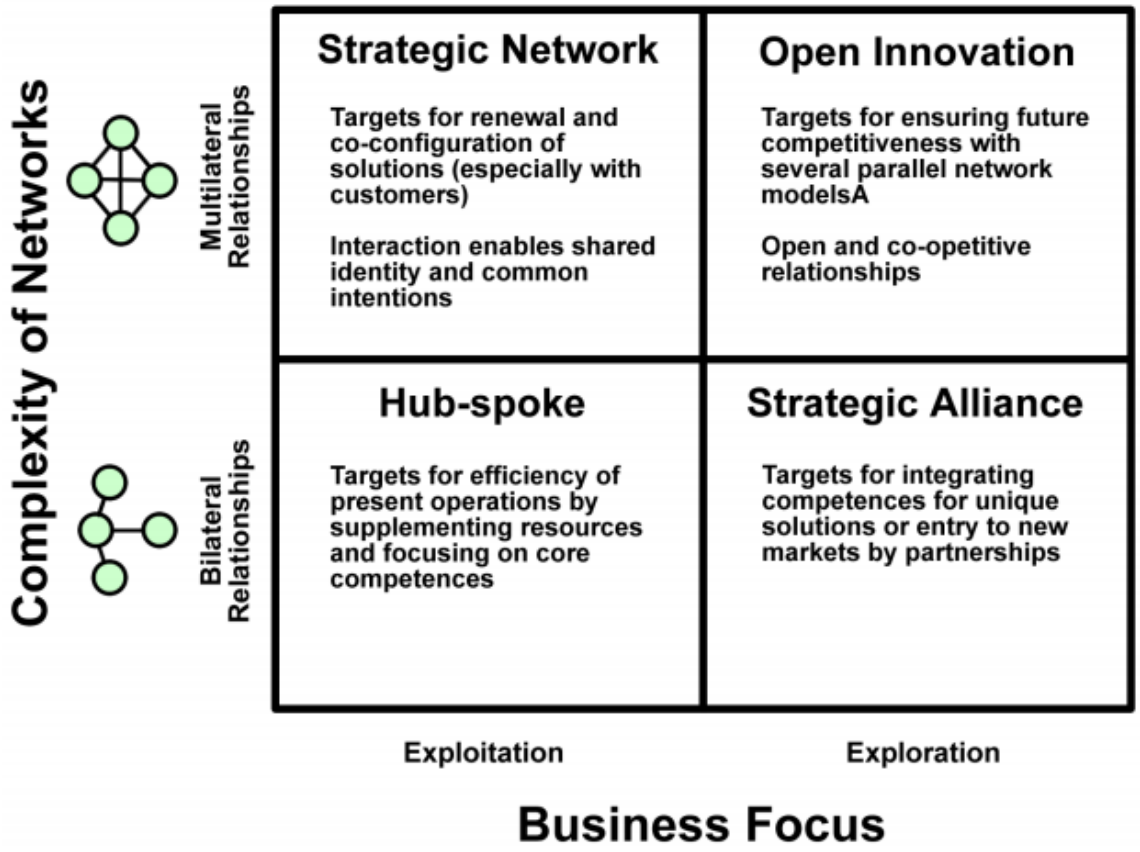


Figure 18. Framework of Business Network Renewal (Hyötyläinen et. al. 2011: 30).

As seen in Figure 18 above, the Hub-Spoke network focus on company internal innovation, mainly efficiency improvements, focusing on the company core competences (Hyötyläinen et. al. 2011). An example of this innovation network is the Motorola Innovation model explained in the previous section governed by the CTO office networking to different business lines and their Innovation Champion teams (Hattendorf, H. 2014).

When co-creation with customers is introduced to the hub-spoke model, but still focusing on core business and existing knowledge, it is called Strategic Network. Such a co-creation network aims in creating new opportunities and refining the existing by sharing common business renewal intentions. In Strategic Alliances model, companies with often different competencies seek to co-create new business value and explore new knowledge by a strategic alliance. Finally, Open Innovation model creates complex parallel and loosely coupled networks for co-creation and learning new competencies. From these projects, usually only few collaborations initiate business renewal (Hyötyläinen et. al. 2011).

5.3 Setting and Measuring Innovation Goals and Targets

In this section the importance of aligning innovation strategy to company's business strategy is discussed as well as how to set meaningful performance metrics to understand the innovation performance.

5.3.1 Aligning Business Goals to the Innovation Strategy

Defining a comprehensive innovation strategy is a topic outside the scope of this thesis. However, from the literature review a key finding was done where a company best practice was to adopt innovation as a business strategy for becoming market leader in its geography. The business goal of the company of becoming the leader in best consumer experience was also set as a goal for the innovation strategy. Furthermore, the company set to achieve two targets for their innovation program: first year goal to engage every employee to innovation and second year goal was to make the innovation program financially sustainable. In order to succeed in the company innovation strategy and thus the business strategy the innovation performance metrics or Key Performance Indicators (KPIs) were aligned to serve this plan (Dewangan et al. 2014). This topic is further explained in the next section.

5.3.2 Holistic Innovation Performance Measurement System

To continue the example in the previous section the principles of a holistic innovation performance system is described. Dewangan et al. (2014) made an extensive literature review and formed a recommendation based on the literature key findings which are simplified and explained below.

1. The scheme should measure both financial and non-financial performance.

As an example, if innovator participation is measured the percentage of ideas submitted per employee is a non-financial KPI whereas average expenditure per idea generated is financial KPI.

2. The scheme should measure performance of the process stages.

Dewangan et al. takes an example innovation lifecycle of four stages: generation and selection of ideas, incubation of ideas, commercialization of ideas and lastly, realization of ideas. In each of these stages non-financial and financial KPIs should be defined.

3. The scheme should address stakeholder goals.

Innovation performance KPIs are aligned with business strategy to measure consumer experience, employee engagement and financial sustainability. Example respective KPIs would be “percentage of ideas about consumer experience of the total ideas submitted”, “Percentage of ideas submitted per employee” and “average expenditure per idea generated”.

4. The scheme should support a cause and effect relationship between the performance measures.

As the example company wanted to measure the employee engagement in the innovation program, thus the causality of how many people are in the company and how many ideas were generated by this group, is an important measure. Other examples of causality could be product price vs customer satisfaction or revenue growth vs profit (Dewangan et al. 2014)

5. The scheme should be easy to implement and use.

Some of the KPI’s of the innovation performance can be derived existing performance measures in the company for instance if the company has implemented the popular balanced scorecard performance measurement scheme by Kaplan and Norton (2001).

The future of innovation performance measurements is to provide investors and shareholders information of the company’s innovation capabilities similarly as currently financial information of for example market share or leverage can be defined. It seems that already now the research for different innovation performance schemes is quite broad. However, in practice the number of measurements defined can be overwhelming (Muller et al. 2005). There seems to be a “sweet spot” of number of metrics applied but this depends from the company case-by-case. Moreover, defining the right metrics to fit the company business and innovation objectives and the innovation process maturity is of key importance

5.4 Defining Innovation Processes, Roles and Responsibilities

As a key area of innovation management and the innovation framework, the roles, responsibilities and processes are investigated in this section. First review is done for the roles and responsibilities to support the innovation process. Secondly, the industry best practice for the process itself in terms of Horizon 1-2 ideas, as explained in Section 5.1.2, are reviewed.

5.4.1 Defining Roles and Responsibilities

In order to facilitate and succeed in the innovation program, the company needs different kinds of people with variety of skills. To aquire these assets it requires the process of recruitment and talent management. However in this study is limited to making a simple analysis from the literature that the innovative company requires great diversity within its employees (Hender 2003). Moreover the talent aquisition and management is out of the scope of this thesis.

However what is in the scope is to understand how to harness the diverse talent within the company in order to succeed with the innovation objectives. Hender (2003) points out that during the innovation process the company requires roles in three different levels: individual, team and organization. From these different levels of roles she proposes that the individual role is the most important requiring a high level of persistense pushing through obstacles along the way. The individual level role is the person who feels strongly that the idea, insight or problem is his or hers. This person can be called innovator, entreprenour, intraprenour or champion. Intraprenour is a term associated to a person acting like an entreprenour but inside the company. Innovation champion, somewhat similarly, is a person who feels strongly about innovation and has possibly already a long experience of it including a wide contact network.

The next key level of innovation roles, team level, consists of group of people with a diverse set of skills and attitudes. Hender’s study interviewed company 3M where the climate for the innovation was very supportive for innovation and where people came together of their own volition forming a cross-functional team working around with what they thought was a great idea. What’s more, in Hender’s interview’s the importance of cross-functional team was found of key in all of the five inverviewed companies of

different business sectors. The study also suggest that the team should have a team leader, experts and team administrators.

Thirdly, the study suggests the importance of an organizational level roles defined into the process, namely the sponsor. In the earlier mentioned 3M example, the interviews revealed that the company encourages the senior managers to take the role of a sponsor. Similarly, in another companies interviews executives, CEO or special purpose boards acted as sponsors for the ideas.

One of the key responsibilty mentioned in the Hender's study was the importance of each innovation project leader. This in the interviews was typically the idea owner, i.e. the passionate intrapreneur, however in one of the companies 3M, the innovation leader responsibility was possible for any member of the team.

Perez-Breva (2017) proposes three kinds of roles: team members, advisors and decision-makers. The key he wants to make through is that the team members have genuine interested in solving the problem at hand and the other considerations are of somewhat less importance. However he also points out that the team members should have different backgrounds in order to learn from one another during the problem solving process. What comes to other roles Perez-Breva proposes that the process involves advisors, or mentors, who may be managers, entrepreneurs, or technologist understanding the technology's business application. What's more, these advisors have a role of sharing feedback on the idea's relevancy to make business impact, i.e. some type of business benefit for the company. Thirdly, he suggests that the team has a good engagement with a decision-maker who cares to see the end result of the innovation process. Perez-Breva emphasizes that the conversation should be around understanding the problem and how to scale the solution in-stead of the ”demo-day”.

Lastly, on top of the three main roles, Perez-Breva suggest a role of an innovation process owner who can help with the questions around the innovation process itself and helps in seeking ways for collaboration accross the company if required.

In this thesis, one more role is discussed, and that is the role of innovation godfather, proposed by Smith (2007). As the role is not widely adopted, it is not discussed here but in Section 5.6.1 when discussing possible solutions for political inertia in innovation.

5.4.2 Making Idea Campaigns Work

As a typical part of the innovation management structures is some sort of process to gather ideas or insights or any type of opportunities for innovation purposes. One of the ways to do this is to arrange idea challenges is to arrange a ideation campaign based on a refined definition of a problem that has a business need and then ask ideas based on this. The problem should be well understood, preferrably the root cause of the problem, and the scope of the probelm should not be too wide or too narrow. If the scope is too wide the ideas will have a very wide spectrum and, on the other hand, if the scope of the problem definition is too narrow, it will result in too few ideas because it will limit the people's creativity (Havens 2015).

This method by telecom company AT&T, is used in their innovation program called ”TIP”, where above described challenges are part of the recurring processes to identify opportunities (Havens 2015). Once the ideas are posted, the process continues with commenting and rating the ideas by the community and something called ”Challenge Review” which is practically a sanity check by the challenge organizer to analyze the ideas to make sure the idea answers to the problem specifically. Once that is done the ideas are filtered via a voting process with a pairwise-method organizing the ideas in pairs where the preferred idea is voted for and initially the top three are selected. These top three winners receive ”social recognition” i.e. non-monetary rewards. In addition to the top three winners the executive team, i.e. the challenge sponsors, pick up their selection of top three winners who could be the same as the voted top three but could also be different ones. These hand-picked winners receive monetary rewards.

In addition to the Challenge-campaigns, the TIP platform is structured for idea collection in a more traditional manner. However the during the submission the idea needs to be put into one of five different categories: ”Start It!”, ”Grow It!”, ”Cost Savings”, ”Customer Experience” or ”Information Technology”. Figure 19 below illustrates the AT&T TIP platfrom's idea submission categories (Havens 2015).

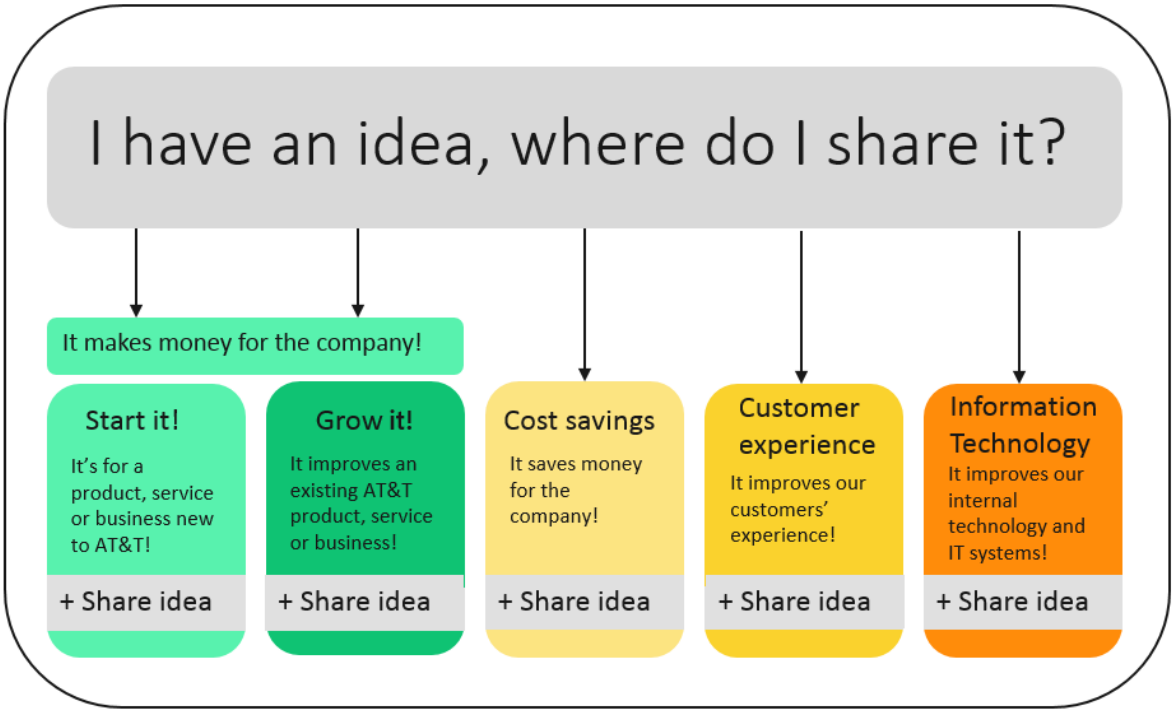


Figure 19. Idea submission categories of AT&T's TIP platform (Havens 2015).

As pictured above in Figure19, the five different groups of ideas have different business impact. The first two from the left are targeted for ideas growing AT&T's business based on either around potential new business or based on existing business. Next, the Cost Savings group is targeted for ideas reducing company's operational costs. Fourth, the Customer Experience "box" facilitates ideas improving the customer experience and lastly, the Information Technology -group is targeting the company's internal technology and IT systems.

What's interesting for the above idea categories is that the first two "boxes" address the three 'Horizons', as explained in Section 5.1.2, i.e. the first group belonging to Horizon 2-3 and the "Grow-IT!" group belonging to Horizon 1-2. Also, the other groups take into account also incremental innovation and even separates ideas that improve the customer experience which might even be just a cost for the company. The gained business impact could be hard to specify.

5.4.3 Solving Tangible Problems

Perez-Breva proposes (2017) another way of organizing the opportunity collection as a process defining tangible real-world problems and teaming up to study the issue in a

structured way. First, the real business problem has to be defined in a structured way, meaning it has to be Recognizable, Solvable and Verifiable. To make a problem recognizable it has to answer to a questions: ”Why is the problem relevant? What is it that you try to accomplish?”. Solvable problem means that you are able to come up with some example solutions to the problem. Finally, verifiable problem has a definition of how to prove that the problem is fixed once the solution is deployed.

Once the real-world problem has the stucture, a team, as defined in Section 5.3.1, starts learning about the problem by trying to demonstrate or repeat the problem thus making the problem increasingly tangible. While they demonstrates the problem the team tests different solutions for the problem by trial and error -manner. If the problem is not solved by the ’apparatus’ of the solution the underlying reasons need to be studied and the problem has to be restated. The trial might require testing the idea different people to discover the feedback or by purely testing the technical solution. This continues until the problem can be proven to be fixed.

The key is to understand that the innovations may or may not happen while the problem is being solved. On the contrary, it means there is no need for coming up with earth-shattering ideas from nowhere but by understanding the problem in very sophisticated manner and finding a suitable solution for it by trial and error. It might be that the suitable solution has no novelty at all (Perez-Breva 2017).

What Perez-Breva suggests is that by approaching opportunity identification in this manner it eliminates the need for finding out which idea is the best for the development – the suitable idea will be discovered during the problem demonstration and solution testing process. This concept will be further discussed in Sections 5.5.1 and 5.6.4.

5.5 Resourcing Innovation Process

For a Service Delivery organization to succeed in ambitious innovation processes the financial resourcing structures must be analyzed. In this section the innovation resourcing is discussed in terms of large organization’s capability to sustain innovation and a possible example of resourcing with a “thrift” mindset.

5.5.1 Resources for Sustaining Innovation in a Large Mature Organization

For a large organization to be able to sustain innovation especially due to changes in technology and global competition, it requires, among other things, resources system that channels money, equipment, expertise and knowledge for running the innovation program (Hage 1988; Kanter 1983). Despite this, the resources in the organizations were often reserved for the existing products' development (Dougherty and Hardy 1996). However, the resources should not rely on availability of slack in normal practice (Singh 1986).

In the study made by Dougherty and Hardy (1996), one of the key findings with the organizations having difficulties to sustain their product innovation, had no strategic support for the organization's innovation program. This in turn, caused that the organizations had to beg, borrow or steal resources. Moreover, the structures for collaboration and finding the sponsorship often relied on one person's, such as innovation champion's or manager's in suitable position, personal networks. Even example was given were a project for new product development had stopped after the key champion had left the company.

What Dougherty and Hardy (1996) learned, was that the innovation program must be a meaningful component of the organization's strategy to receive resources to support sustainable innovation. By making the innovation meaningful by the top managers, the understanding of innovation importance will improve. The study proposes that to achieve this the top management has to more often involve their team into strategic discussions. This in turn, makes sure that nothing contradictory, such as cost control, cannot interfere the innovation program. The study points out that cost cutting should be valued, but it must be "redefined to be consistent with product innovation practice."

5.5.2 Thrift Resourcing Mindset

Given the likely fact that the resources are not always available in the desired extend, a change in thinking is needed. In fact, in the early stages of the innovation process this can be even a beneficial change. This mindset is discussed by MIT professor Perez-Breva (2017). He suggests that the requested resource should be directly related to the demonstration value of it. In other words, during the process of analyzing the tangible problem or testing the solution prototype against the problem, as described in Section

5.3.3. the team must learn a thrifty mindset. Rather than giving the team a limited budget of, say $1000 the team must learn creative ways to demonstrate the issue. What they could do is use what they already have at hand or buy from the local hardware store as an example, and perhaps demonstrate at a smaller scale.

Perez-Breva (2017) says that this type of thrifty mindset can be easily practiced by giving the team a limited time to come up with a next level of restated problem or given a decision power to use only available resources until they reach a certain milestone. This way, he says from his experience, the team will learn to self-regulate the resources and never spend more than a couple thousand dollars.

5.6 Promoting Innovation Culture

The last component of the conceptual framework of this thesis is the Innovation Culture and how it should be promoted. This section discusses the political dimension in the innovation and about a mindset change what is truly needed to spark the innovation culture.

5.6.1 Overcoming Innovation Politics

Innovation, by nature, deals with a change and for the company it should be a change for the better in terms of business renewal or reaching for the competitive advantage. However, with the change, it might also cause threat to the existing offerings or established hierarchies. This in turn, might cause resistance which could lead resisting innovation initiatives (Schon 1963). In addition, it could lead to risk aversion caused by uncertainty of the business value of a new product and services and favoring incremental innovation over radical (Schon 1963; Schwartz 1973).

To overcome this dimension of politics in innovation, Smith (2007) found that the existing innovation roles such as champion, or sponsor, did not alleviate the political inertia. Thus, he suggests a new role of innovation godfather, which he explores in three case studies. The findings in the studies suggest that the godfather should provide following forms of assistance: vision, credibility, protection and access to resources.

By sharing his vision, the godfather believes in the business potential of the idea. In addition, the radical idea requires often that someone highly respected person provides credibility to the idea. Thirdly, the idea might require protection from a potentially hostile culture within the company. Lastly, the radical idea in a critical phase of the innovation process requires access to resources which can be hard to obtain due to the reasons presented above (Smith 2007).

The innovation godfather in Smith's (2017) research and case companies was a role of a senior executive in large companies. Furthermore, it was limited to radical innovation. He suggests a need for further research if the role is suitable for more general application.

5.6.2 Starting from a Hunch

Innovation is often perceived as a process that requires an Eureka moment when the idea lightbulb lightens the person's mind with the magical innovation idea. Even more, it is often associated with the work of great visionaries only. However, wouldn't it be relieving that this is not really necessary at all and that everyone can innovate. This is what Perez-Breva (2017) suggests with the method he calls "innovating". He describes innovating as:

"Innovating is something you do continually; innovation is the afterthought."

What he means by this is that the innovation is the end-product of non-linear process of problem solving and how it was achieved is not easy to explain in hindsight. Some of the great innovations are usually under a meticulous inspection to reveal the pattern that produced it. In fact, often the story sounds very linear, but this is not the case in reality (Perez-Breva 2017).

The relieving method that the innovating method proposes for sparking the process is to start from a Hunch. The Hunch, he says, can be almost anything, idea, problem, invention, insight, challenge and so on. However, the key is to reformulate the Hunch into a problem. The problem does not need to be a big problem, but it must be a real one. What's more the problem must be tangible in terms of being recognizable, solvable and verifiable, as discussed in Section 5.3.3.

Once the Hunch is described as a structured problem, it is put under a magnification lens to understand it in very sophisticated way. Also, possible solutions are imagined. These solutions can be anything that might fix the problem. The key is to try to demonstrate the problem to achieve learning, and to test the prototype of the solution against the problem in a trial and error way. As long as the problem is not fixed by the prototype, the learnings are studied and the problem is restated, which starts a new iteration (Perez-Breva 2017). The relieving factor in this method is, that the novel ideas to solve the problem may, or may not, appear during this process. Once the real problem is fixed in the terms of what was set in the beginning, it should be enough.

According to Perez-Breva (2017), the utmost importance is to leave the problem and the imagined solutions open-ended. On the contrary, in the traditional development process the solution is often described in predefined way based on certain pre-defined customer requirement which it's then studied, funded and deployed to the market.

The innovating method, proposed by Perez-Breva (2017) is explained in this thesis in various sections and the method has further concepts which are not defined here. It is not in any way a revolutionary method, in fact it is very similar to Lean Start-Up methods proposed by Ries (2011) by testing the idea with Minimum Viable Products. Similarly, the "Innovating"-method demonstrates the idea with the prototype and the outcome result is either fixing the fault or then learning from it and restating the problem.

However, the Innovating method touches many key points of why the company's innovation culture often fails to achieve the wanted results. Firstly, the emphasis on here is that the innovation is not only for creative masterminds, and secondly, it is a structural problem solving by doing, meaning by studying the issue, demonstrating it in small scale with parts at hand and scaling up along the learning process. Furthermore, the permission to be wrong, even intentionally and productively, is what he explains is the key to learning and discovery of new solutions (Perez-Breva 2017). Lastly, an important point is that the resources required should only be proportional to the demonstration value. In effect, if the problem understanding or prototype testing requires new competencies of pieces of hardware they should be only valuable if the problem can be learned through them. The key interest is to genuinely learn from the problem and from each other, which will also help to promote the company innovation culture.

5.7 Conceptual Framework of This Thesis

The aim for the literature review was to find best practices to enhance the SEU's innovation capability and to find introduction to Business Innovation and to Innovation Management. Below, the key findings are presented merged into the conceptual framework in Table 6 below.

The conceptual framework is divided into six topics just as the headings were in the conceptual framework Section 5. Furthermore, the middle row represents the sub-Section headings. On the right, the row describes the key proposals in this stage.

The first topic gives understanding to the very definition of innovation, whereas the second topic shares insights on what type of structures are needed to run the innovation program in a company.

The following topics are more related to the innovation barrier topics found in the current state analysis. These discuss firstly, the innovation goals and targets and how they should be tied into business objectives of the company. Next topic proposes commonly found good practices for innovation roles and their responsibilities as well as explains how the process of opportunity identification through idea challenges should be arranged. It is further explored in the topic by the concept of solving tangible problems.

After this, the whole process resourcing is dealt with in a large mature company context and with a thrifty mindset. Finally, the innovation culture is touched by addressing political dimension of innovation as well as explaining a proposal of what it takes to spark the innovation process, i.e. the Hunch.

In the next Section, the conceptual framework together with the current state analysis findings are used to build a proposal to enhancing SEU's innovation capability by a proposal list of actions and an updated framework draft.

Table 6. Conceptual Framework of this study.

Topic	Area of focus	Key Proposals and Sources
Introduction to business innovation	• Innovation areas and definition • Innovation novelty • Innovation horizons	• Commonly defined groups of innovation are products, services, processes (Smith 2006) • "Innovation as the creation of new knowledge and ideas to facilitate new business outcomes, aimed at improving internal business processes and structures and to create market driven products and services. Innovation encompasses both radical and incremental innovation" (du Plessis 2007). • Innovations can be categorized by their novelty (Henderson and Clark 1990). • Innovation Ambition Matrix helps managing innovation portfolio business impact (Nagni and Geoff 2012).
Introduction to innovation management	• Innovation management standardization • Innovation framework • Innovation business networks	• Innovation management structure is required to facilitate and govern company's innovation program (ISO 2014; CEN 2013). • Innovation framework is a simple set of operationally important structures to aid innovation (Hattendorf 2014). • Co-created innovation is a way to renew and sustain business via four different business network models (Hyötyläinen et. al. 2011).
Setting and measuring innovation goals and targets	• Aligning business goals to innovation strategy • Holistic innovation performance measurement system	• Innovation strategy should be tied to the company business objectives with meaningful targets (Dewangan et al. 2014). • Innovation performance measurement system should be implemented with five different guiding principles in mind (Dewangan et al. 2014).

Defining innovation processes, roles and responsibilities	• Innovation roles and responsibilities • Making idea campaigns work • Solving tangible problems	• Innovation roles and responsibilities should be arranged in individual, team and organizational level (Hender 2003). • Challenge based campaigns and clearly focused innovation aids opportunity identification (Havens 2015). • Ideation should be organized by solving tangible problems (Perez-Breva 2017).
Resourcing innovation process	• Resources for sustaining innovation in a large mature organization • Thrift resourcing mindset	• Innovation should be a meaningful component in the organization strategy with dedicated resources (Dougherty and Hardy 1996). • Thrifty mindset in available resources cuts costs and enhances creativity with the help of scaling (Perez-Breva 2017).
Promoting innovation culture	• Overcoming innovation politics • Starting from a Hunch	• Innovation godfather role may help overcoming the political inertia of innovation (Smith 2007). • Innovation process can start from a Hunch which will be defined as a structured problem. Novel ideas may or may not be discovered during the problem solving process (Perez-Breva 2017).

6 Building Proposal of the Key Actions for the Case Company

This section describes the Initial Proposal building of this thesis which is then validated in the next section for a Final Proposal.

6.1 Overview of the Proposal Building Stage

In this section the proposal for the key actions to enhance SEU's innovation capability is created. The proposal is based upon the findings from the Current State Analysis and the Conceptual Framework and built together with the key stakeholders as defined in Section 2.3.

As a starting point, the current state analysis found 13 barriers to innovation in four different barrier topics, but also many valuable strengths. In fact, these strengths revealed by some of the key informants became a key element of the proposal building offering an insight of best practice used in some of the domains within the SEU organization.

To overcome the found barriers, a Conceptual Framework was built based on best practice found from the literature. Next, the method of 5 Why's was experimented to create a first draft of the proposal. This was done by the researcher alone. With the results of this experimentation and literature best practice that formed Conceptual Analysis, and finally, the strengths found from the Current State the proposal was crafted in the workshops.

The proposals created with the key stakeholders in the workshops are presented in the first part of Section in a Data Collection 2 table. Next, the key actions are proposed in four different sections representing the four different topics of the key barriers described in Section 4.3.1. Lastly, all the proposed key actions are presented. The key actions are validated in Section 7.

6.2 Drafting the Proposal by Using 5 Why's

In this section, an experimentational usage of 5 Why's for overcoming the barriers found in the Current State is explained and the conclusion of learnings of the result is discussed. Lastly, the suitability of the method for this purpose is discussed.

6.2.1 Key Learnings of Using the 5 Why's

In this study the method was experimented solely by the researcher by using the interview data as an input for the process. However, in case it was needed a new discussion was started with the respected people. Also, some of the proposed causes were validated further by interviewing the right experts. Such example was the barrier of not having innovation support roles defined, where HR manager was consulted.

The 5 Why's approach was used to analyze each of the key barriers. During the process some of the barriers lead to same root cause which as a finding is very relevant. However, as the aim for the method was to structure the CSA collected data and to experiment the method, all of the root cause statements and findings are just proposals for further to be discussed with the stakeholders.

Example process of using 5 Why's as used in this study is pictured below.

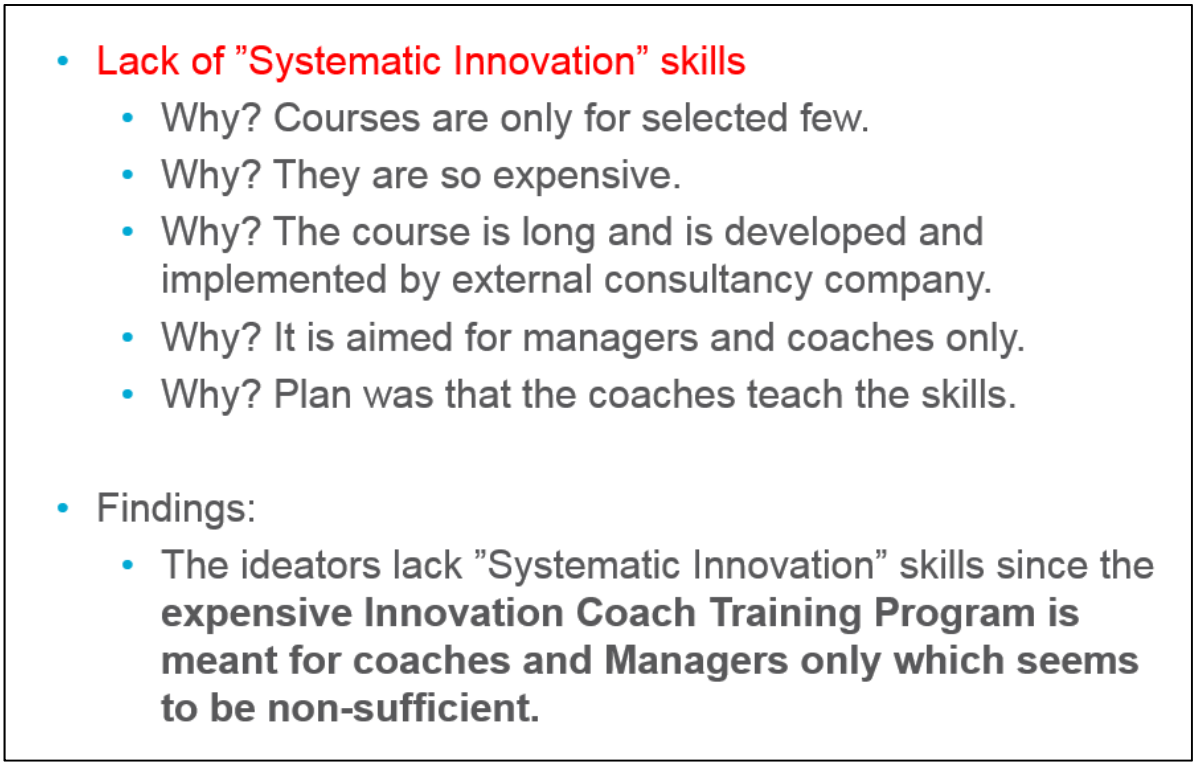


Figure 20. Using 5 Why's in practice example 1.

The learnings of the 5 Why's process is summarized in Appendix 2.

The key information learned by using the method was that many barriers lead to similar root causes. In fact, one of the assumed root causes of these barriers is the lack of

dedicated budget being a major barrier. This is very interesting since only two of the interviewees articulated that being one of the key issues. The barrier leading to this root cause were: "lack of support from middle management for innovation", "lack of openness due to fear of politics", "Lack of support from middle management for innovation" and "Personal innovation goals/KPIs causing 'false' innovation." Let's look at the 5 Why's in detail for one of them in Figure 21 below.

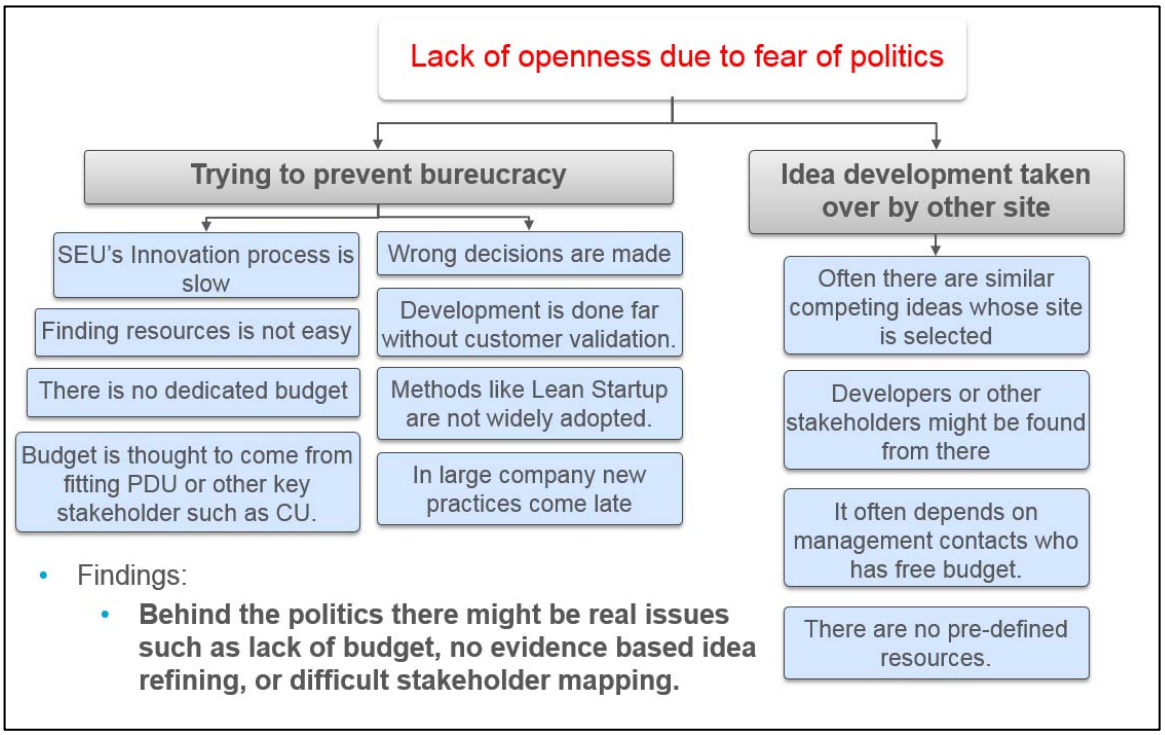


Figure 21. Using 5 Why's in practice example 2.

As can be seen from Figure 21 above, the problem raised multiple causes probably due to the problem statement being too wide to start with. In any case, the learnings sculpted from the all of field notes gave three different proposed root causes of which two are related to resources and one is related to development methods.

Another interesting learning was that "No time for idea refining and follow-up" which was a root cause analysis based on interview notes with a former key SEU Innovation Drivers who also acted as a Line Manager within his sub-domain. When going through the interview notes it was noted that he explained their narrow scope being a key to direct discussion with the respected Product Development Unit and Business Line. The narrow scope of innovation around their strategic goals of "Network Design and Optimization"

helped them to establish excellent collaboration with the PDU and BL. However, the organization including the PDU and BL were parts of a relatively recently acquired company so also that was a key to the collaboration. All the causes are detailed in Figure 22 below.

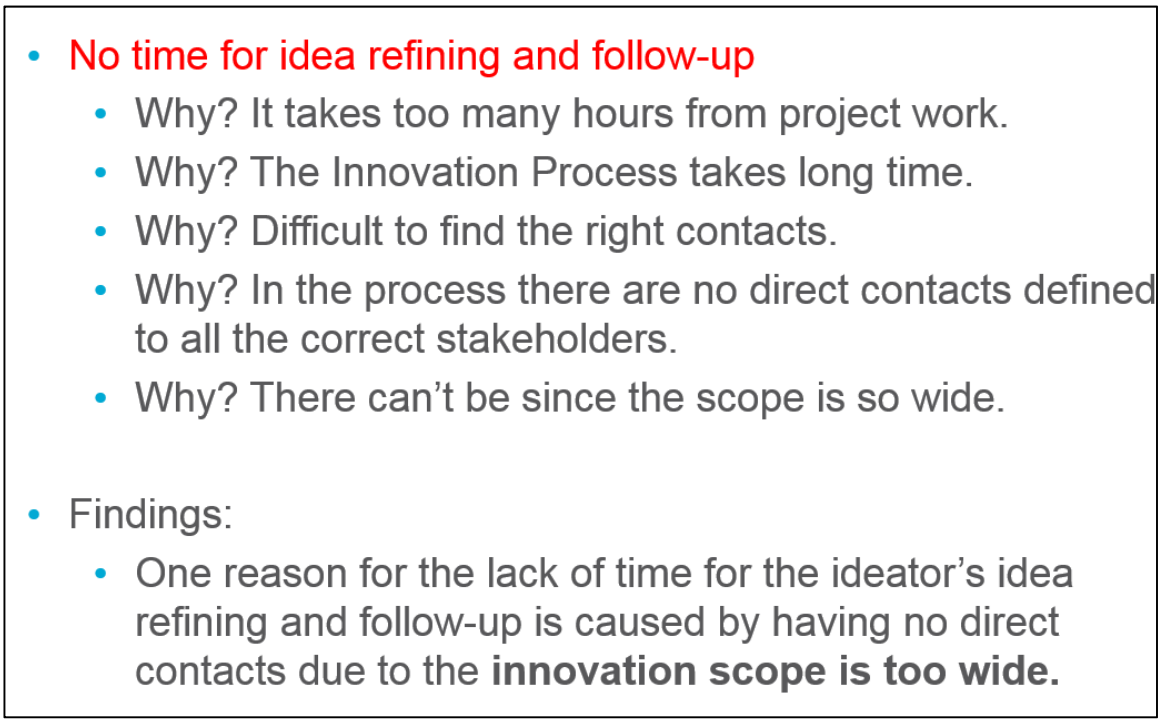


Figure 22. Using 5 Why's in practice example 3.

As seen from the causes, it may be up to a debate if the researcher used his own reasoning since this innovation scope being too wide was not brought up in the interviews. However, the broadness of the innovation scope was discussed during the analysis of the existing innovation framework in Section 4.4.1.

Now that the possible root causes were sculpted from the interviews, it was time to propose for a solution to each of them. In order to do this, the problems that lead to same conclusion were grouped. Next, the root causes were put into priority order by estimating which of the root causes were the most impactful and might be needed to be fixed before the others. This was, in fact, the proposed method with the Barriers to Innovation approach as explained in Section 3.2. Finally, a possible solution for each root cause or grouped root cause was proposed. The proposal was either a learning from the conceptual analysis or already discovered from the current state due to many people sharing their ideas.

At this stage the drafted list of actions based on the result of the 5 Why's is not analyzed in detail since the proposal, even though how close it came to the final proposal, would most likely not be adopted since it was only work of researcher interpreting the interview results. However, both the process of grouping the root causes and drafting the actions can be found from Appendices 3 and 4.

To conclude the method of 5 Why's was experimented due to lack of existing method to overcome the innovation barriers was found. However, the method gave a structured definition based on the interview data to the underlying causes of the barriers. These are helpful in order to draft a proposal key of actions for overcoming the barriers. However, since the exercise was done by the researcher alone using the current state data from the fieldnotes it includes some levels of interpretation and own reasoning. Moreover, the proposed key actions might not get enough buy-in from the key stakeholders since it was not done together in the workshops.

Nevertheless, important learnings from using the method included the assumption that many of the barriers lead to same root cause especially to not having sufficient resourcing for innovation. Another key learning was that the narrow scope for innovation might be a key in finding stakeholders within the respective PDU for further development.

The 5 Why's proved to be an effective method to systematically identify the underlying causes of the innovation barriers. In addition, by using the already proposed methods to overcome the barriers, i.e. the priority and impact, the barriers with same root causes were grouped for further filtering and finally prioritized. Lastly, a drafting of a possible solution was done, for further discussion. If the method would be applied together with the group who owns the problems, it might be a valid tool for overcoming the barriers to innovation in wider context.

In the following Section, Data collection 2 presents findings from the workshops for the next round of proposal building together with the key stakeholders.

6.3 Findings of Data Collection 2

During the Initial Proposal building a series of workshops were conducted. The methods used was a face-to-face workshop or a workshop conducted over the Skype. Moreover, whiteboard was used to aid the discussion by recalling the key barriers and for note

taking. The researcher also informed about the found best practice from the CSA stage and the ones found from the literature. The findings of this Data collection 2 are presented in Table 7 below.

Results of Data collection 2, shown in Table 7 below, offered a good start for the initial proposal building. During the workshops valuable findings were made but some of the proposals came already in the CSA which is natural since many of the interviewed people are truly seasoned innovation experts with a long history in the company. Together with the information gathered from this stage also few decisions were made as seen from the first item where the team decided to stop the current innovation initiative within the local team and start focusing on the Serviceability initiative which calls for new innovative ways to save costs and enhance the customer experience. In the following four sections, Data 2 is used to build the key actions around the four different barrier areas.

Table 7. Key stakeholder suggestions for proposal building (Data 2) in relation to findings from the CSA (Data 1) and the key elements of CF.

Topic and Item Number	*Key focus area from CS (from Data 1); and the element of CF (Conceptual Framework)*	*Suggestions from stakeholders, categorized into groups (Data 2)*	*Description of the suggestion*
1. Setting and measuring innovation goals and targets	CS: 1. Targets not clear. 2. Personal innovation goals/KPIs causing ”false” innovation. CF: 1. Aligning business goals to the innovation strategy. 2. Holistic innovation performance measurement system.	a) Focus on the 5G Serviceability b) Common strategy for innovation. c) Strategy for the SEU should not change too often. d) Individual goals should be tied to value generated by innovation. e) KPI targets should be tied to the team instead of individual in long term.	a) In a workshop proposal building stage the team decided that the current innovation initiative will be stopped for the local team in Finland. However, during the past months the innovation initiative had slowly ended across the organization leaving the team in Finland one of the last ones to continue with it. The focus was decided to set towards innovation within the developing Serviceability program. In another meeting with the Serviceability Champion it was decided that the team in Finland starts to look for idea opportunities within the area of 5G. The 5G Serviceability program was still in development stage and clearly called for innovative ideas. b) Already during the Current Stage the key innovator suggested that the organization should be aligned with company-wide strategy for innovation. c) In a workshop during the proposal building stage the team concluded that the strategy of the SEU should not change so often. d) Key Innovation Driver in the Spanish site suggested that the personal KPIs are tied to the innovation value generated instead of the number of innovation ideas submitted. e) Already in the interview stage one the Line Managers suggested that the KPI targets should be first set to individual level to make sure the team acts upon the strategy and in longer term to the team as a whole so that any single idea creating enough value meets the targets of the team.
2. Setting and measuring innovation goals and targets	CS: Buss. Innovation –organization not driving company-wide innovation practice. CF: Introduction to Innovation Management	a) New Business Area for Emerging Business should drive the global innovation strategy.	a) The Key Innovation Driver suggested, already in the Current State interview that the new Business Area for Emerging Business should take the responsibility of driving the global innovation strategy.
3. Defining innovation processes, roles and responsibilities	CS: 1. Stakeholders not clear. 2. Lack of support from middle management for innovation. 3. Job roles for innovation not defined. CF: Defining Roles and responsibilities	a) Direct contacts to the Business Line, PDU and Customer Units where the projects are is the key. b) The idea originator can be the solution architect for the idea even though it taken over to the PDU. He acts mostly as feedback loop	a) Proposal originated already from the CS interview phase. A key Innovation Driver from site in Spain described their key success factors in stakeholder management. On top of having the coach and driver role as in the other sites, the narrow-scoped innovation strategy of Network, Design and Optimization allowed them to identify direct contact networks towards the related Business Line, Product Development Unit and Customer Units. The process started by a problem at the customer project. Next the idea is discussed with Customer Unit who agrees that the idea should be developed in order to fix the problem. This in turn is discussed with the related Business line direct contacts as well as the PDU

		facilitator from customer back to development. c) Maybe Serviceability is better suited with clear focus and interfaces who receives the ideas. d) For support roles there is an initiative already after last discussion towards HR to create job roles for Innovation first in terms of external idea competitions we facilitate and later to the internal purposes wider in the company.	contacts. The narrow focus and the team long history had allowed them to create good relationship to the key stakeholders associated to the innovation focus area. b) From the same site the best practice was that once the idea is refined in a level that it can be presented to the key stakeholders the idea originator i.e. the innovator normally took a role of a solution architect steering the development by providing customer input towards the PDU. This way the innovator was being able to stay working with the idea but not being responsible of the development in terms of resources and the actual programming. Once the idea was developed it was tested again together with the innovator at the customer where the problem existed. c) A line Manager in a SEU team suggested that Serviceability with focused innovation and clear stakeholders and sponsors would work better. d) Issue of HR not defining support roles for innovation was already being in the process of solving. A follow-up is required.
4. Defining innovation processes, roles and responsibilities	CS: Idea collection tool not facilitating funded campaigns with direct business objectives. CF: Defining problem-based campaigns.	a) For idea collection and opportunity identification AT&T uses focused and sponsored campaigns with business objectives.	a) Again, already proposed on the CS stage the key innovation coach and driver in US suggested ideation campaigns based on business objectives. The suggested way uses focused business objective related boxes for idea submission and specific business challenges-based ideation campaigns.
5. Resourcing innovation process	CS: Not sufficient financial resourcing. CF: 1. Thrift resources and mindset 2. Resources for sustaining innovation in a large mature organization	a) We will never get a dedicated budget just for our own SEU innovation purposes, but if the innovation is part of Serviceability we should have direct sponsors.	a) During the proposal building the SEU Middle level Manager suggested that it is very unlikely that we would get our own dedicated budget for innovation for our own purposes. However, it was discussed that with Serviceability linked innovations there should be direct resources from the Serviceability side.
6. Promoting innovation culture	CS: Lack of openness due to fear of politics CF: Overcoming innovation politics	a) Every site wants to be unique	a) In the proposal building workshop a key innovator said that it is natural for all sites wanting to be unique and will always involve some political dimension.
7. Promoting innovation culture	CS: Lack of ”Systematic Innovation” skills. CF: Starting with a Hunch	a) Innovation Workgroups should be used as a learning community.	a) During the Current State the Innovation Coach from Spain suggested best practice to use local innovation Workgroups as for learning skills related to innovation. They act as a community sharing information for example when one person goes for the Innovation Coach Training Program learning the “Systematic Innovation”.

6.4 Setting and Measuring Innovation Goals and Targets

The first section describing the proposal in detail is dealing with innovation goals and targets regarding innovation strategy and the performance measurements. It's divided into four key actions proposals.

6.4.1 Define SEU's Innovation Strategy as a Meaningful Component of BNEW's Serviceability Area "Easy 5G"

One of the barriers found in the CSA was defined as targets not being clear. What was meant by was firstly that the purpose of innovation for the team was not clear and secondly, the scope what to innovate was not clear but also if everything was still measured in the individual level. Moreover, it was also mentioned that the innovators did not understand the new Serviceability target.

To overcome the above-mentioned barrier the literature review suggested an important finding.

> The innovation strategy should be a meaningful component of the organization's business strategy (Dougherty and Hardy 1996), and that the innovation strategy should be measured with meaningful metrics (Dewangan et al. 2014; Muller et al. 2005).

As a result, it was decided during proposal building workshops that if the SEU was were to innovate it had to be aligned with the strategy of Business Area Network's strategy and thereby with the strategy of the whole company. One of the key strategy areas for BNEW is to cut operational costs by initiative called Serviceability. Additionally, by doing implementing the products and services in a smart way, mainly by introducing automation, the customer experience was expected to be enhanced. Nevertheless, the role for SEU was still unclear during the proposal phase so a decision was taken to study the new initiative in two ways: how the feedback loops were implemented and if SEU could play part in it, and secondly, what innovation opportunities lie with the Serviceability area within the new 5G portfolio.

After a discussion with the Serviceability Champion and also the key Innovation Driver, it became obvious that not only does the Serviceability initiative for 5G called “Easy 5G” offer a lot of opportunities for innovation, but also that those were not yet fully identified. It was then proposed by the Key Innovation Driver that the SEU should focus on innovation within the “Easy 5G” Serviceability framework.

6.4.2 Create a Narrow-Focused Innovation Strategy Based on 5G Serviceability Objectives

To further align the innovation strategy with the organization’s strategy a focus must be defined. While interviewing the Innovation Driver from the SEU’s more successful innovation team from Spain, it was learned that the narrow-focused innovation is key in successful collaboration with the PDUs and the Business lines but also the key Customer Units. The second most discussed barrier “stakeholders not clear” was missing exactly the above. It did not have clear contacts to the key stakeholders due to its broad scope for the innovation.

After discussing with the Serviceability Champion, a following focus for the Serviceability was defined: “Easy network deployment/integration and network assurance and diagnostics.” As a result, this is proposed to be the Innovation focus within the “Easy 5G” Serviceability initiative.

6.4.3 Move from Hub-Spoke Innovation Towards Strategic Networks Innovation Network Model

The objective of Serviceability to cut the customers’ and the company’s OPEX costs by new smart products and services, and at the same time, to reduce the complexity of the product usage requires efficient interaction with the customer. It requires asking the right questions to understand the pain points that the current offering cannot solve. Nevertheless, as learned from the interviews, the current ways of working allowing mostly efficiency improvements, did not support innovation co-creation together with the customer. Again, this must be part of the innovation strategy definition to overcome the “targets not clear” -barrier.

In the conceptual framework, the business renewal networks models were studied.

> The study from Hyötylainen et al. (2011) offered a view of how different networks could be utilized for business renewal.

This study proposes that instead of focusing on only to the internal efficiency improvements, SEU should also move their strategic targets to co-create together with the key customers. With the 5G networks still not being launched the company would greatly benefit from business renewal co-created with the strategic customer.

In addition to the Conceptual Frameworks learnings, an important piece of information was received from the Serviceability Champion stating that the “Easy 5G” area already has some kind of Customer Experience -oriented workgroup in place. This naturally must be studied further but still it suggests that the co-creation actions might already been started supporting this proposal.

Nevertheless, the internal efficiency improvements should not be neglected, but the SEU should move towards the Strategic Networks innovation network model.

6.4.4 Define Meaningful Innovation Performance Metrics Directly Tied to Business Objectives

As discussed in Section 6.3.1 the barrier of “Targets not clear” also pointed towards the innovation performance targets. During the interviews and proposal building, the KPIs were often discussed and mostly they were seemed beneficial. As one of the team’s Line Manager said, it is good to have personal metrics at least to start with to get the employees accountable. His view also was to set the targets with the value to the whole team so that any person’s valuable idea could be worth meeting the targets set for the whole team. By doing this the whole team was accountable more than the individuals.

To overcome the “Targets not clear” barrier the literature offered a recommendation.

> It is recommended to define multi-dimensional (financial and non-financial) metrics for the innovation which are tied to business objectives. Moreover, the metrics should follow causality, measure performance of each innovation process stage, and leverage existing KPIs if applicable Dewangan et al. (2014).

During the proposal building, defining the metrics on this level was not discussed, which is a limitation to the proposal building. It is however proposed by the researcher, based on the literature to suggest that meaningful metrics should be defined. What will be the exact ones to select are out of the scope of this study, but for the first year they could provide information of how many ideas are suggested by the SEU to the “Easy 5G” Serviceability initiative. Additional metrics providing financial information of the innovation process performance of the Serviceability should be further studied as well as which existing KPIs could be utilized.

6.5 Defining Innovation Processes, Roles and Responsibilities

Barriers related to processes, roles and responsibilities found in the current state analysis were mostly related to the stakeholders not being clear or not defined but also about the processes for ideas belonging to different Horizons. In this section, four key actions are defined to overcome these barriers.

6.5.1 Embed Problem-Based Innovation Process for SEU into the 5G Serviceability Process

In the previous section, the SEU’s innovation framework was proposed to be part of the organization’s strategical objectives, namely the “Easy 5G” Serviceability initiative. However, in practical terms, the process for facilitating the innovation must be implemented to the existing Serviceability process. Moreover, this study proposes that process should be starting from a problem instead of an idea.

During the proposal building the Serviceability Champion described the process for the Serviceability area “Easy 5G”, and even though it did have and entry point for the ideas from the customer facing organizations it was more oriented to defining requirements which were then defined as solution areas or “use-case” defining specific functionality. In short, the process was lacking detailed innovation processes especially for SEU if it were to take part in the initiative.

The conceptual framework offered recommendations for problem-based campaigns.

> Perez-Breva (2017) and Havens (2015) both suggested that the innovation process should start from a Problem. Perez-Breva (2017) went even further to start with what he calls a Hunch, which can be any idea, insight, patent, customer pain point or any type of starting point that can be structured to a problem with recognizability, solvability and verifiability. In addition, Havens (2015) working at AT&T had initiated problem-based campaigns that had a connection to company's or customer's real problem.

The proposal of problem-based innovation process was also suggested during the CSA by a very experienced innovation coach and a driver.

6.5.2 Define Innovation Roles and Responsibilities in Individual, Team and Organization Level

As found from the current state analysis identifying and reaching the needed stakeholders were a major barrier to the innovation. During the proposal building some key stakeholders within the Serviceability process were identified but since the process seemed to lack the innovation structures the support roles were not defined.

The literature offered a variety of roles and definition to their responsibilities. It was noted that the team-level role was entirely missing, and the sponsors were not identified, however, Data collection 2, i.e. the workshops and discussions, did not make a proposal of which roles should be defined.

A key proposal from the conceptual framework was followed.

> As proposed by Hender (2003), the roles should be implemented in individual, team and organizational level.

This thesis proposes that these roles would be innovators, champions, diverse teams, business minded mentors, sponsors, godfater and a process owner.

The list of roles seems exhaustive, but it should be noted that one person can have several roles: i.e. champion is usually innovator, part of team and even process owner; sponsor can be also mentor. Moreover, the CSA also suggested that the innovator and

the process owner roles were already implemented successfully as well as a coach and a driver role.

However, the roles in the team level were missing and in addition the champion role or the godfather role was not adopted, and the sponsors were hard to identify or reach. Therefore, a recommendation from literature was followed.

> According to the literature (Hender 2003), the team and sponsor are regarded as mandatory for successful innovation framework. Hender's research (2003) also suggested that the team role should be implemented in cross-functional terms and even suggested more detailed requirements for the individual skills.

However, this study suggests defining the requirement for such teams to being simply "diverse" to prevent over-complication.

Lastly, the role of a godfather, with a responsibility for protecting the more ambitious ideas from political inertia should be considered.

6.5.3 Define Cross-Functional Collaboration into the Serviceability Process to Facilitate Innovation Teams

As discussed in previous section, the team-level roles were not implemented according to the CSA data. Moreover, the latest revision of the SEU Innovation Framework had implemented collaboration as a key objective for the whole framework. Despite this, the stakeholders for collaboration were still found as a key barrier. As a result, this study proposes that cross-functional collaboration should be defined to the process of the "Easy 5G" Serviceability initiative.

Cross-functional team, by definition requires people from different functional roles to collaborate. These types of roles could be for example developers, testers, service delivery experts, managers. During the discussion with the Serviceability Champion these roles were already existing in the process so creating a process where they team up for innovation development purposes should be possible to implement.

Even though the collaboration was found to be an important topic in the proposal building stage, it was not studied in depth in the literature review which is a limitation to this proposal.

6.5.4 Organize Opportunity Identification on Business Problem-Based Campaigns and Focused Innovation

The current state analysis identified a barrier stating: “Idea collection tool not facilitating funded campaigns with direct business objectives”. During the interviews the same person who identified this barrier also suggested that the AT&T way to implement opportunity identification should be the preferred way. This concept was studied in the literature review and as discussed in Section 6.4.1 the similar approach was found effective from the other literature as well.

It is then prosed that the “Easy 5G” opportunity identification should be campaigned around business objectives and defined as problems with recognizability, solvability and verifiability. Once the problems are defined the diverse team -role and the cross-functional collaboration process as suggested in Sections 6.4.2 and 6.4.3 should be utilized. The literature offered a following proposal.

> Cross-functional teams should study the problem and define an open-ended solution example and continue by demonstrating the problem and prototyping the solution for it as suggested by Perez-Breva (2017) with his Innovating method.

Once the problem can be demonstrated and the solution prototype is found to make the problem even more tangible the Serviceability process with the embedded Innovation Framework as discussed in Section 6.4.1 should facilitate the problem analysis and the idea prototype refining further. Again, a finding from literature was adopted.

> In addition to the problem-based campaigns, the AT&T way suggests focused “boxes” for different types of ideas (Havens 2015).

These boxes should be defined based on the scope defined in Section 6.3.2 i.e. “Easy network deployment/integration and network assurance and diagnostics.” In addition to

the scope they should be also separated into different Horizons as described in the literature review in Section 5.1.3 and also described in the AT&T campaign description in Section 5.4.2.

6.6 Resourcing Innovation Process

To overcome the “Lack of sufficient financial resourcing” a key finding from the literature was made.

> Funding the innovation process cannot rely on availability of slack in normal practice (Singh 1986). Furthermore, the innovation program should be a meaningful component of the organization’s business strategy in order to make sure dedicated resources are available throughout the process (Dougherty and Hardy 1996).

During the proposal building, it was however stated that SEU on its own will most likely never receive a dedicated budget for innovation because the company is on a strict cost-cutting program. Due to this, it was proposed that if the SEU’s innovation framework will be embedded into the “Easy 5G” Serviceability process, SEU should have access to the resources allocated to this strategic program.

However, as the funding is already embedded into the Serviceability process, which SEU Innovation framework proposes to be part of as discussed in Section 6.3, it is not required to propose a separate action for the resourcing.

One more discussed item from the literature was Thrift resourcing mindset.

> Thrift resourcing mindset can be considered as a means of funding but also as a mindset of making do of what is at hand and study the problem at a smaller scale (Perez-Breva (2017).

It should not require a lot of money to learn what actually is the real problem and how it could be demonstrated. This type of mindset should be adopted to the SEU’s innovation culture especially during the start of the innovation process.

This approach was not, however, discussed during the validation phase and as such is a limitation in the study. Nevertheless, it will be added to the updated innovation draft in the validation phase as an important finding, as defined by the researcher, which should be explored.

6.7 Promoting Innovation Culture

The last barrier topic defined, promoting innovation culture, discusses about barriers related to learning and the political dimension of the innovation. However, as learned from the Introduction to Innovation Management part of the conceptual framework, it was clear that to sustain the innovation culture, the governance structures are required. This must be included to the key action proposals which is the topic of the next sub-section.

But to start with the learning part, the barrier of “lack of ‘Systematic innovation’ skills” was discussed during the proposal building. It was in fact part of the strengths to have the Systematic Innovation process, but still it was so expensive that it meant it was only made possible for selected few. However, the team in Spain had implemented a local Innovation Workgroup which efficiently shared the innovation skills and know-how in a community learning way. This thesis proposes that this part of the already existing practice should be underlined for all the sites. Anyhow, as it is already existing practice there is no need to make a key action proposal for this. It will be however underlined in the Validation stage when the final key actions are reflected to the existing framework to make an updated innovation framework draft.

6.7.1 Create Governance Structures for Stimulating, Steering and Sustaining Innovation Framework

From the current state analysis, it was learned that the Key Innovation Driver with the Domain Driver’s formed Innovation Workgroup was responsible of parts of these activities. In addition, in the past the Innovation Program had had Governance board for the framework consisting of the SEU management. Nevertheless, a best practice from conceptual framework was adopted.

> It is important to form a C-level Innovation Governance board with Innovation Champions acting as advisors to the board (Deschamps & Nelson (2014)

As discussed in Section 5.2 some of the governing roles defined by Deschamps & Nelson (2014) could be seen as directing and some of the roles as more required in daily innovation operations such as processes, roles and responsibilities. However, the decision of what directing actions should be defined for the governing function was not discussed in the proposal building stage during the workshops. Thus, it will remain as a limitation for the study to not define these functions in detail. Nevertheless, a governing function should be included as a key action to take and this study suggests it must be a role of C-level management i.e. the Chief of Innovation office or the new Emerging Business area together with the top management of the Business Area Networks where the SEU organization belongs to. Lastly, the study proposes that the governing function utilizes Innovation Champions as advisors.

6.8 Initial Proposal for the List of Key Actions

This section concludes the Proposal Building stage by listing the key actions to enhance SEU's innovation Capability in Figure 23 below.

1. **Define SEU's innovation strategy as a meaningful component of BNEW's Serviceability area "Easy 5G".**
   - New Business Area Network's Serviceability initiative area, "Easy 5G" aims for cost savings and better customer experience through innovative and easy to use products. Currently under development: identifying opportunities.
2. **Create a narrow-focused innovation strategy based on 5G Serviceability objectives:**
   - Easy network deployment/integration and network assurance and diagnostics.
3. **Move from Hub-Spoke innovation towards Strategic Networks innovation network model.**
   - From internal efficiency improvements towards renewal by co-creation with strategic customers.
4. **Embed problem based innovation process for SEU into the 5G Serviceability process.**
   - "Easy 5G" calls for action to identify opportunities but lacks innovation management structures.
5. **Define innovation roles and responsibilities in individual, team and organization level.**
   - Innovators, innovation champions, diverse teams, business minded mentors, sponsors, godfather and process owner. One person can have several roles: i.e. champion is usually innovator, part of team and even process owner; sponsor can be also mentor.
6. **Define cross-functional collaboration into the serviceability process to facilitate innovation teams.**
   - To facilitate collaboration requires required resources to be enabled by the process.
7. **Organize opportunity identification on business problem-based campaigns and focused innovation.**
   - Teams solving tangible problems during the campaigns. Normal idea submission is organized into business objective-based boxes.
8. **Define meaningful innovation performance metrics directly tied to business objectives**
   - Multi-dimensional (financial and non-financial) metrics measuring innovation performance. Leverage existing KPIs if applicable.
9. **Create governance structures for stimulating, steering and sustaining innovation framework.**
   - Specific top management governance board with innovation champion advisors is required to enable continuous improvement of the innovation practices.

Figure 23. Initial Proposal for the list of Key Actions.

The list of Key Actions shown in Figure 23 above, consists of nine actions in their order of importance. The actions are discussed in detail in the sections above.

In the next stage of the study, these actions are validated by requesting feedback from the key stakeholders in order to create the final list.

7 Validation of the Proposal

This section reports on the results of the validation stage and points to further developments to the initial Proposal. At the end of this section, the final proposal is presented together with the updated innovation draft with the key actions included.

7.1 Overview of Validation Stage

This section validates the proposal developed in Section 6. The Initial proposal of the Key Actions were validated with by presenting the key actions to the key stakeholders who took part to the current state and the proposal building.

First the feedback is presented in similar table format as in the proposal stage, but now the data is structured based on the key proposals. Secondly the feedback validation is discussed and lastly, the final proposal is presented with the changes suggested.

7.2 Findings of Data Collection 3

The Data Collection 3 findings are concluded in Table 8 below.

A general comment must be made regarding the feedback presented above in Table 8. As the research was followed the action research methods, the proposal was built as much as possible with the team of key innovation stakeholders of the SEU organization. Therefore, also the criticism was quite low which can be seen in many topics having no specific feedback. In the following section, the feedback that was received is used to develop the actions.

Table 8. Findings from Data Collection 3.

Proposal	*Further Definition*	*Feedback from stakeholders, categorized into groups (Data 3)*
1. Define SEU's innovation strategy as a meaningful component of BNEW's Serviceability area "Easy 5G"	New Business Area Network's Serviceability initiative area, "Easy 5G" aims for cost savings and better customer experience through innovative and easy to use products. Currently under development: identifying opportunities.	a) Definitely should focus on the 5G Serviceability area since the Serviceability project for legacy products is quite well established. b) Start with actions we can implement easily and progress with small steps. c) In short term we should focus on the cost savings side of the Serviceability initiatives and in long term in focusing in business growth.
2. Create a narrow focus innovation strategy based on 5G Serviceability objectives	Easy network deployment/integration and network assurance and diagnostics.	OK
3. Move from Hub-Spoke innovation towards Strategic Networks innovation net-work model	From internal efficiency improvements towards renewal by co-creation with strategic customers.	OK
4. Embed problem-based innovation process for SEU into the 5G Serviceability process	"Easy 5G" calls for action to identify opportunities but lacks innovation management structures.	OK
5. Define innovation roles and responsibilities in individual, team and organization level	Innovators, innovation champions, diverse teams, business minded mentors, sponsors, godfather and process owner. One person can have several roles: i.e. champion is usually innovator, part of team and even process owner; sponsor can be also mentor.	OK
6. Define cross-functional collaboration into the serviceability process to facilitate innovation teams	To facilitate collaboration requires required resources to be enabled by the process.	a) Cross-functional collaboration within the Serviceability process might be difficult to arrange. b) Collaboration should be also with people with similar functions. c) Collaboration should be easier to arrange within BNEW people.

7. Organize opportunity identification on business problem-based campaigns and focused innovation	Teams solving tangible problems during the campaigns. Normal idea submission is organized into business objective-based boxes.	a) For Serviceability there is existing 'ideabox' for collecting ideas. b) Comment from past experience: In Product Development ideas submitted are considered but lack customer feedback.
8. Define meaningful innovation performance metrics directly tied to business objectives	Multi-dimensional (financial and non-financial) metrics measuring innovation performance. Leverage existing KPIs if applicable.	a) For the metrics we should definitely understand the ROI for the Serviceability project.
9. Create governance structures for stimulating, steering and sustaining innovation framework	Specific top management governance board with innovation champion advisors is required to enable continuous improvement of the innovation practice.	a) Most likely the new Emerging Business head will take some lead on the company-wide innovation and also in the Horizon3 space.

7.3 Developments to Proposal Based on Findings of Data Collection 3

In the below sub-sections only the key actions that received feedback will be dealt with.

7.3.1 Define SEU's Innovation Strategy as a Meaningful Component of BNEW's Serviceability area "Easy 5G"

The prosed action was received well in general. One of the comment was that the organization should utilize the 5G competence it has and focus on the 5G area only. However, at the same time it was commented that the since the Serviceability focuses mainly on the cost reduction from both customer and internal OPEX costs, it might bring challenges to more ambitious ideas associated with high risk. These ideas would possibly be Horizon 2 ideas expanding the existing business to new-to-company adjacent business. However, they could also be Horizon 3 more transformational ideas aimed to new customers with no existing solution. Nevertheless, the feedback provider also stated that perhaps with some success stories from more traditional solutions we could move towards this growth-direction. This would most likely be relevant for the company soon once the extensive cost cutting programs will end.

One more general comment was offered that the list of nine actions were quite exhaustive and that it would be good to select only few of them for the first year and then gradually improve with small steps.

From the above comments made the proposal is developed to highlight the most important steps for the first year. For the first remaining year, from Q2 onwards, Actions number 1, 2 and 4 are suggested and remaining actions should be implemented next year. Next year should be more growth-oriented which is fitting for this proposal.

7.3.2 Define Cross-Functional Collaboration into the Serviceability Process to Facilitate Innovation Teams

Defining cross-functional collaboration to the serviceability process got good feedback as in everyone understands that collaboration is required, however it was not found easy to implement. One of the comments was that we should mainly collaborate within Business Unit Network which is a good proposal. However, since we do not yet know what kind of links the program has outside BNEW we should not create any restrictions. This however, should be carefully analyzed when the processes will be created.

As discussed already in the proposal building, the difficulty of creating such process defined collaboration should not be overly complicated since during the workshops it was learned that some collaborative connections are already in place between Services Delivery organizations and Product Delivery organizations. In fact, it was even stated that more contacts would be needed.

The last piece of information received was that the collaboration should be aimed also within the people having similar functions and not only cross-functions. This comment was taken into consideration; however, it was discussed that possibly any type of collaboration in the beginning is an achievement. Also, the literature clearly suggests cross-functional collaboration is the key (Hender 2003) so that part will remain in the proposal.

7.3.3 Organize Opportunity Identification on Business Problem-based Campaigns and Focused Innovation

The proposal got good feedback since the current tool within the Innovation Framework has not been very liked but more like a bucket of ideas. What's more from the new feedback it was learned that the Serviceability program already has some type of Ideabox-tool in place which was said to be very similar to the company's IdeaBoxes-tool which is also in use with SEU. It should be further studied how this tool is implemented but the key still is to organize the opportunity identification based on business problems.

Another comment was given that the usual idea collection in product development organization often lacks customer feedback to the ideas. He said that the ideas are usually always considered, and the good ideas implemented if possible, but the problem was that the judgement if the idea was good or bad was solely on the team with no access to customer validation. This comment supports the both the problem-based campaigns but also the co-creation proposal as stated in Action number 3.

To sum up, the proposal will remain as suggested before as the feedback discussed seems to validate the need for it.

7.3.4 Define Meaningful Innovation Performance Metrics Directly Tied to Business Objectives

The only proposal for this action was that it would be advisable to have Return of Investment metric measuring the whole Serviceability “Easy 5G” program performance. This proposal will be noted in the updated Innovation Framework draft.

7.3.5 Create Governance Structures for Stimulating, Steering and Sustaining Innovation Framework

During the validation, the function and the need for governance structures was well received. However, this was not further discussed more than it was speculated that most likely the new Emerging Business Area organization head will take some ownership of this problem especially in Horizon 3 innovation space.

Thus, the proposal will remain as defined now.

7.4 Final Proposal

The Final Proposal section sums up the proposal building and validation stages by presenting the validated list of Key Actions as well as presents the draft of updated Innovation Framework.

7.4.1 Key Actions to Enhance SEU’s Innovation Capability

In below list updated Key Actions list is presented. As discussed in the previous section, the only major proposal was to highlight the key actions for the first year of implementation. The highlighted actions in the initial proposal were number 1, 2 and 4 but in the Final list they have been defined as first three actions. The final Key Actions list is presented in Figure 24 below.

Figure 24. Final Key Actions to Enhance SEU's Innovation Capability.

The list of key actions shown in Figure 24 above, defines the same actions as in the Initial Proposal but the first actions to implement this remaining year are highlighted.

7.4.2 Updated Innovation Framework Draft

Finally, the secondary objective of this thesis was to reflect the Key Actions and the Best Practice from the past Innovation Framework to a new updated draft. When comparing to the Innovation Framework analyzed in Section 4.5.1 this new updated version proposes to separate the Strategic goals of the framework from the very operative from the main topics of the framework. This is firstly due to making the actual framework as simple and easy to understand as possible, but to also make sure to visually point that the innovation strategy should be top-down structured to make sure that it is actually aligned with the company business strategy.

Figure 25 below illustrates the new updated Innovation Framework draft.

As seen from Figure 25, a key change is the fact that the Governance structures are clearly defined and also directed from top-down with Innovation Champion as advisors. Overall, the updated Framework draft follows the recommendations from the Innovation Management Section 5.2 by especially the Framework example from Section 5.2.2.

What is important also with the updated Framework is that the best practices found from the current state are still part of the tool. These are marked in green color. In addition, the feedback received from the validation stage is included in the Framework namely the Return of Investment as an example metric in bullet number 5.

To sum up, as the name of the proposal suggest this updated Innovation Framework is a draft since it is not validated on its own. Nevertheless, it visualizes the validated Key Actions in the Innovation Framework format and follows recommendations found from the literature.

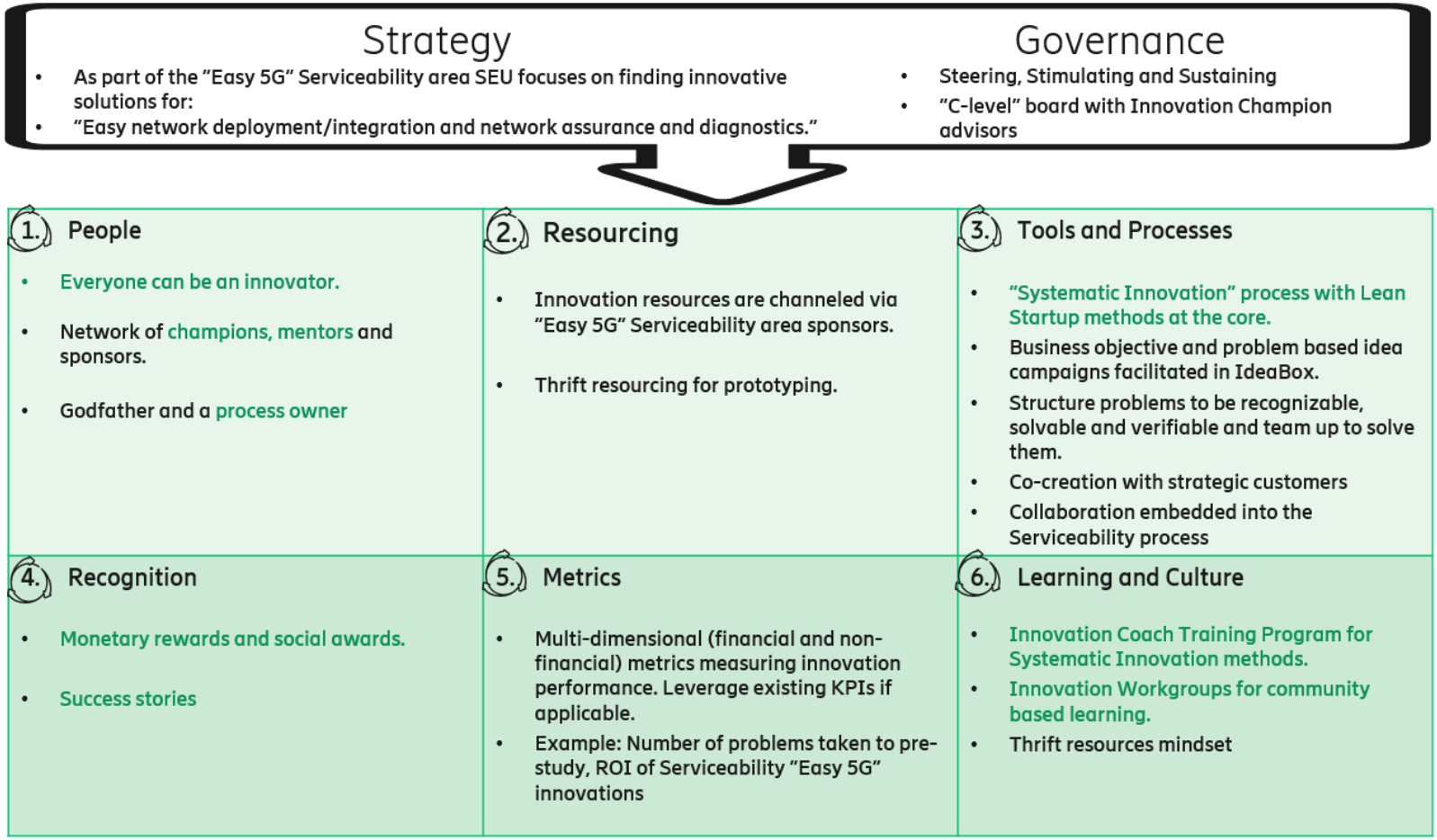


Figure 25. Updated Innovation Framework draft.

8 Conclusions

This section concludes the thesis. First, an Executive Summary provides and overview of the thesis objectives, methods and findings. Next, the implications of this study are discussed together with the already decided next steps and finally further recommendations. Thirdly, the thesis evaluation is discussed and then lastly, the thesis is concluded with a closing words.

8.1 Executive Summary

In today's highly competitive and changing ICT market, companies must seek ways to renew their businesses and find a way to sustain their competitive advantage. The challenge which the companies face is not about lack of innovativeness or creativity in the company, quite the opposite since usually that was the reason the company got into the position where they are. But the problem may however be in sustaining the innovation. In a study made by Deschamps & Nelson (2014) they found that only few companies thought carefully of the "governing" functions of the innovation management practice. What this lead to was lack of steering, stimulating and sustaining innovation culture in the company. This in turn might leave the organization isolated from the company's strategic objectives and create barriers to the organization's daily innovation practice.

The objective of the thesis was to propose key actions to enhance the innovation capability of the case company's Service Expertise Unit. The case company is one of the leading networking and telecommunications companies with over hundred years heritage of industry shaping innovations. It's centralized global Service Expertise Unit (SEU) supports internal product development organization and operative market areas in services delivery.

Aside from daily work, the added value creation by broad scale of incremental and even radical innovation lies at the very heart of SEU's existence with annual innovation program result of over 14 million Euros. However, the company's continuing extended cost cutting programs and a series of organizational changes have disturbed SEU's innovation capability, i.e. valuable ideas are too few and the journey from idea generation to realized innovation takes too long. At the same time the new Business Area Network's Serviceability initiative calls for enhanced innovation capability.

By conducting series of interviews and workshops with barriers to innovation method, the study revealed 14 barriers, of which three had a severe impact. The three key barriers were “Targets not clear”, “Stakeholders not clear” and “Not sufficient financial resourcing”. Together they created a challenging environment for the innovators to succeed in their idea realization which caused frustration and lack of motivation. The only commonly acknowledged way to get ideas realized was to depend on the person’s own contact networks and persistence to drive the idea forward even after many setbacks.

Together with the interview data and best practice found from the literature, the proposal of key actions was built and validated together with the key stakeholders. It proposes nine actions for improving the existing SEU’s Innovation Framework and how to integrate it to the new Serviceability initiative focusing on 5G solutions. One of the key learnings from the literature that resulted into the first proposal was that the innovation program must be a meaningful component of the company’s business strategy. In addition, the study found best practice from a SEU team in Spain where the same Innovation Framework was used successfully with the only difference of having clear strategy aligned narrow focus for the innovation program. This became the second key proposal of the thesis. Last key finding during proposal building suggested that with the company’s new Serviceability initiative “Easy 5G” called for action to find opportunities. This became the perfect opportunity for the SEU’s operative competence to embed the innovation framework to the 5G focused Serviceability program.

As a result, the organization decided to seize the last remaining activities within its current innovation framework and change the focus towards the new Serviceability program. By doing this the organization can overcome the key barriers by focusing on narrow but strategically important objectives of the 5G Serviceability program but also benefit of its predefined stakeholders and dedicated resources.

The impacts of the thesis findings, if fully implemented, point to potentially significant increase in SEU’s innovation capability. Also it contributes to company’s core business area’s capability to utilize its global service delivery expertise and insights for focused 5G innovation. For general application, outside the ICT scope, this study uses methods to reveal and overcome barriers to innovation which can be useful in enhancing innovation capability in any context.

8.2 Managerial Implications: Implementing the Key Actions

One of the key barriers found from the study was that the existing framework was not fully developed and populated. It meant that the parts such as company strategy execution with the framework was not defined properly. Consequently, this and the other barriers might have caused that the framework was not taken effectively into use in all parts of the organization. Another interesting finding was that the existing Innovation Framework was already the third iteration of the framework made with mostly different people from the ground up not being able to address the issues with the earlier framework.

As discussed in the earlier section, the challenge in the business innovation is not about the lack of innovativeness in the company but more on how to sustain and improve the innovation practice in the company. To point at the issues, as done in the current state analysis of this thesis, is not difficult, but overcoming the issues might be very difficult and take more than just creating action list. It requires a lot of hard work and collaboration with a mindset of allowing oneself to be wrong and willingness to meticulously study what the problem is to learn and evolve. However, it all must start with creating a culture where the innovation program is meaningful part of the company's business strategy.

The SEU organization discussed in the study has already taken the first steps by setting the focus on the strategically defined initiative which required a decision to stop doing what did not work. Despite the impact of this study's revealed barriers it was a decision already taken earlier but since the organization was under a change the old ways were still in use in parts of the organization. The proposal for the key actions to enhance the old does not however make the team suddenly succeed in the innovation but it is a start to the right direction and what's most important it was done together with all the key stakeholders of different roles.

The recommended next step for the organization is to communicate the decision of the new focus in top-down manner. Secondly, the study suggests focusing on the implementation of only the first three key actions during the first year. It is worth identifying few people who would be the first to pilot the new ways of working. In the study these types of innovators were defined as the innovation champions i.e. people who are passionate about fixing what's broken and have some experience on previously implemented ideas.

The last important step to start this year is to create a structure which channels feedback for developing the new processes. The similar action research mindset as used in this thesis would be worth considering in order to continuously learn and improve to efficiently make the change towards the new ways of working together with the key people.

8.3 Evaluation of the Research

This thesis is evaluated according to the research quality criteria in terms of its validity, reliability and relevance. The evaluation is conducted in below three sub-sections.

8.3.1 Validity

Quinton and Smallbone (2006) define validity in two aspects. Firstly, Internal validity, by answering if the outcome of the research answers to the what was asked in the initial objective. Secondly, to Eternal validity to define if the study outcome could be applied in another context and in what extend.

The initial purpose of the study was to understand why the organization has difficulties with the innovation practice and how to solve this problem in some ways. In other words, the thesis goal was to enhance the innovation capability of the organization. After the stages of the research, first to understand the problem at current state, and then reviewing the literature best practice, the final proposal defined nine key actions for the organization. These actions that are explained in the priority order have an interest for the organization to enhance its innovation capability as expected in the objectives of the study.

Regarding the external validation, the research used the barriers to innovation method for finding the problems at the current state. This method in literature is discussed since 1972 (Witte), and therefore is an accepted in the academic world as a way to understand different sources of barriers. This method could be applied in another context and situation but especially in a large, mature ICT company setting. In addition to this, the research found many of the barriers that seemed to be well researched in the innovation management area. Therefore, the information drawn from the key literature and the proposals built from them could be interesting in at least the same business context.

8.3.2 Reliability

A reliability in research discusses about whether the outcome of the study would be the same if someone else had conducted the study (Quinton and Smallbone (2006). Some of the ways to strengthen the reliability according to Quinton and Smallbone is that the research should use different sources of information, different data collection tools, collecting data at different time points and to collect data using different researches at different time points.

In terms of the first two requirements the reliability was ensured by finding information from wide variety of sources and by using different tools. In practice the data collection in the Current State Analysis was conducted by interviews and workshops, meetings and discussions. The Conceptual Framework sources of information was studied from various different sources including academic journals and other academic publications, popular books related to innovation management and articles published by consultancy companies such as McKenzie and lastly, from the reports published of best practice from the field.

However, in terms of collecting data in different time points and with different researches this was not done. In practice the research was carried by January-April time span by the researcher with action research methods involving other key people into the research process. Only data collection done in before this was the pilot interview done four months before the main data collection period.

8.3.3 Relevance

This study proposed deals with how an organization can enhance its innovation capability. By doing so it contributes to the importance of seeking ways to innovate and seek the competitive advantage in the highly competitive and constantly changing ICT market. In addition, the proposal suggests that the organization will focus innovating in the 5G networks area which is the core business of the company. However, the technology itself within the area is not mature yet but is planned to be commercially launched at 2020. Thus, it leaves a lot of room for contributing to this strategically vital future business for the company.

In order successfully renew find new sources of business, the innovation structures must be built in a way that it will be sustainable. Some of the suggested actions in this thesis to accomplish this is to create strategic importance for the innovation program, create governance structures and implement idea opportunity campaigns that are solving real customer problems.

In addition to the relevance of the study for the organization, and implementation of the innovation management structures, the proposed actions are created so that they can be fairly easily implemented. This is ensured by creating actions based on the previous best practice and suggesting that these will be part of the new Serviceability process with certain added improvements that have been created together with people in concern. The whole process is also suggested to be started gradually by implementing the three key steps first.

Nevertheless, the relevance of this thesis can only be fully evaluated if the proposed actions are taken into use and by measuring the performance of the new practice.

Finally, the findings of this study can be relevant also for the other parts of the company that are eager to find ways to improve their innovation processes. This work has already been started by presenting the early findings and proposals to the Innovation coaches at R&D in Finland. So far, the learnings have been relevant in the sense that the researcher has gotten involved in the local R&D's Hackathons and as a mentor for local innovation campaigns such as "Kids who Innovate". By joining to these activities, the newly found knowledge can be discussed and demonstrated to the local innovation champions.

8.4 Closing Words

This thesis was conducted for an organization which, despite the barriers, has actively participating and highly skilled people who seek to fix and improve things which they see are broken. As a proof of this, the innovation program has been a success not only by the ways it has created financial value for the company but also by showing example that sometimes the right mindset for finding the company's competitive advantage might come from the ground-up. Now, what is still needed are the strong leaders to help sustain and flourish this ground-up innovation movement with a top-down support. Together we can create an innovation culture that will spread across the company like a virus.

References

Burns, D. (2007). *Systemic Action Research. A Strategy for Whole System Change.* Policy Press at the University of Bristol.

Cantamessa, M., Montagna, F. (2016). *Management of Innovation and Product Development*. Springer-Verlag London.

CEN/TS 16555-1 (2013). Standard Recommendation S.R. CEN/TS 16555-1:2013 Innovation Management Part 1: Innovation Management System. NSAI Standards.

Cox, G. (2005). Cox Review of Creativity in Business: building on the UK's strengths. London: HM Treasury.

Deschamps, J-P. et al, (2014). *Innovation Governance: How Top Management Organizes and Mobilizes for Innovation*, John Wiley & Sons, Incorporated. ProQuest Ebook Central

Dewangan, V. et al. (2014). Towards a holistic enterprise innovation performance measurement system. Technovation 34. Pages 536-545.

Doughtery, D., Hardy, C. (1996). Sustained product innovation in large, mature organizations: overcoming innovation-to-organization problems.

Doz, Y. (2001). Clubs, clans and caravans: the dynamics of alliance membership and governance. Garnegie Bosch Institute, Berlin.

Eccles, R. G. (1981). The quasifirm in the construction industry. Journal of Economic Behaviour & Organization. Vol 2, Issue 4. 12/1981. Pages 335-357

Greenwood, D.J. (1999). *Action Research: From practice to writing in an international action research development program*, edited by Davydd J. Greenwood, John Benjamins Publishing Company. ProQuest Ebook Central.

Hage, J. (1988). *Futures of organizations*. Lexington, MA: Lexington Books.

Hattendorf, H. (2014) Seven Steps to Creating a Successful Innovation Framework. Available from: <http://www.innovationmanagement.se/2014/01/27/seven-steps-to-creating-a-successful-innovation-framework/ >[18 April 2018]

Hender, J. (2003). *Innovation leadership: Roles and key imperatives.* Henley Management College.

Hitt, M., Hoskinsson; R. & Nixon, R. (1993) A mid-range theory of interfunctional integration, its atecedents and outcomes. Journal of Engineering and Technology Management, 10, 161-185.

Hyötyläinen et al. (2011). Renewal Through Co-Creation in Business Networks. Open Source Business Resource Vol.March 2011, 29 – 37.

ISO/TC 279 (2014). Innovation Management. Strategic business plan. Doc. Number: N 43. Draft #3. Date 11/12/2014.

Kanter, R. 1983. *The changemasters.* New York: Simon & Schuster.

Kaplan, R.S., Norton, D.P., (1992). The balanced scorecard-measures that drive performance. Harvard Bus. Rev. 70 (1), 71-79

Lee, B. (2000). Separating the Wheat from the Chaff: Fms, Flexibility and Socio-organizational Constraints. Journal of Technology Analysis & Strategic Management, 12, 218-228.

McNiff, J. (2013). *Action Research: Principles and practice*. Taylor and Francis. ProQuest Ebook Central.

Muller, A., et al. (2005). Metrics for innovation: guidelines for developing a customized suite of innovation metrics, Strategy & Leadership, Vol. 33 Issue: 1, pp.37-45.

Nadella, S. (2014). Satay Nadella email to employees on first day as CEO. Microsoft News center. Available from: <https://news.microsoft.com/2014/02/04/satya-nadella-email-to-employees-on-first-day-as-ceo/ >[26 April 2018].

Nagni, B.; Tuff, G. (2012). Managing Your Innovation Portfolio. Available from: <https://hbr.org/2012/05/managing-your-innovation-portfolio>. [14 August 2017].

Ohno, T. (1988). Toyota production system: beyond large-scale production. Portland, Or: Productivity Press. ISBN 0-915299-14-3.

Perez-Breva, L., (2017) *Innovating. A Doer's Manifesto for Starting from a Hunch, Prototyping Problems, Scaling Up, and Learning to Be Productively Wrong.* The MIT Press.

Plessis, M.D. (2007), "The role of knowledge management in innovation", Journal of Knowledge Management, Vol. 11 No. 4, pp. 20-29.

Quinton, S., Smallbone, T. (2006) Postgraduate Research in Business. A Critical Guide. Sage Publications.

Ries, E. (2011). *The lean startup: how today's entrepreneurs use continuous innovation to create radically successful businesses.* Penguin Books Ltd., London.

Sattler, M. (2011). *Excellence in Innovation Management. A Meta-Analytic Review on the Predictors of Innovation Performance.* Gabler Verlag | Springer Fachmedien Wiesbaden GmbH, Wiesbaden.

Schon, D.A., (1963). Champions of radical new inventions. Harvard Business Review 41, 77-86.

Schwartz, J.S., (1973). The decision to innovate. DBA Dissertation. Harvard University Graduate School of Business Administration, Boston, MA.

Shavinina, LV. (ed.) (2003), *The International Handbook on Innovation*, Elsevier Science & Technology, London. Available from: ProQuest Ebook Central.

Singh, J. (1986). Performance, slack, and risk taking in organizational decision making. Academy of Mangement Journal, 29: 562-585.

Smith, D. (2006). *Exploring Innovation.* The McGraw-Hill Companies.

Smith, D.J. (2007). The politics of innovation: Why innovations need a godfather. Technovation 27: 95-104.

TEKES. (2010). The Future of Service Business Innovation. Tekes Review 272/2010.

Tellis, G.J. (2012). *Unrelenting Innovation: How to Build a Culture for Market Dominance*. John Wiley & Sons, Incorporated. ProQuest Ebook Central.

Witte, E. (1973). *Organization für Innovationsentscheidungen: Das Promotorenmodell.* Schwartz, Göttingen.

Appendix 1. Summary of Field Notes

	Participants / role	Topic, description	Key findings
	Data 1, for the Current state analysis (Section 3 or 4)		
1	Respondent 1: Innovation coach	Pilot interview for the CSA. What is innovation and what are the barriers of the current innovation framework.	• Always important to recognize different horizons. • Problem that company needs to fix (Horizon1 focus) o IdeaBoxes was a nice attempt but is half worthless IMHO. AT&T did better with focused/sponsored campaigns with business objectives. • For Horizon3 ideas the current implemented innovation Framework is not mature enough.
2	Respondent 2: Key Innovation Driver	Strengths and barriers of current Innovation Framework.	• Key person to come up with the previously used innovation framework. • The current focus of innovation is for IoT, AI, Security, support, pre-emptive support. • Earlier the steering of ideas for resources was implemented via organization leadership team acting as an innovation board. Good ideas need backing from a big boss. Previously head of organization had some budget reserved for good ideas implementation. • Inspiring leader for innovation is needed. • Our strength was engagement and active participation instead of passive. • Organization leader has to be open and transparent about the goals for the organization. • People have high technical understanding in the organization. • Top management support for innovation is highly visible in the CEO letters but it is not visible from the middle and lower level management. • Same for risk taking. Lower level management is paralyzed probably because of cost savings. • We have tremendous opportunity with our learning services which is a great asset. • For organization top the innovation is not top priority. • We lack financial resources for innovation. • After the re-orgs the roles are not clear. • We are lacking motivation after the changes in the organization to innovate. • The Business Innovation organization is not driving company-wide innovation practice. The new Emerging Business Area should take this responsibility. • In past we were not able to develop the Innovation Framework fully before the organizational changes occurred. One of the components missing is the how the framework executes company strategy. • We should always anchor a good idea, even though we are not asking for money, to correct business unit before progressing with the idea. • Company long heritage is not a key for success in the future. In current competitive and changing market we might disappear very easily. • However, collaboration is a key to solve this situation as the situation forces us to learn from each other.

3	Respondent 3: Key Innovation Driver 2	Strengths and barriers of current Innovation Framework.	• Key person to develop the current Innovation framework and also driving the initiative and nowadays working together with others in Serviceability initiative and also people working with organization strategy to develop the innovation initiative further. • Focus nowadays Serviceability and Automation. Also Augmented Reality (AR) and Virtual Reality (VR). • Good ideas have found their ways forward by prototyping, incubating and finding support from business portfolio responsible people. • Biggest strength is within the people who contribute even during difficult times (innovation barriers). • Innovation culture we have created is our strength. • Current framework is a strength. • Innovation and all the hype around it is used as a political tool. • We lack middle manager support for innovation. • We have the right people in place for required competencies. • Innovation target KPIs must be tied to individual performance targets for proving people's track record in their innovation successes. • Some people outside our organization resist ideas since it might cannibalize their own products. • HR needs to define innovation support job roles. They should be allocated to use 15-30% of their time to innovation support. Roles such as coach or driver. • We lack resources, both people and their time for implementing some ideas. • Business Innovation Function from top-down is needed to steer the whole company's innovation. Hopefully the new business area for emerging business will take ownership of this.
4	Participants 4-9: Innovator 1, Innovator 2, Innovator 3, Innovator 4, Innovator 5, Innovation Driver (researcher)	CSA workshop with the part of the local team based in Finland. Strengths and barriers of current innovation framework.	• Process is there but it does not support much. Ideas need to be pushed through by yourself. • Resources available only few hours from line manager's budget for idea follow-up. • Small scripts, as efficiency improvements or incremental innovation is possible but more ambitious projects are almost impossible to realize. • What to innovate not clear. • Stakeholders not clear. Not able to identify person who has the mandate to consider the idea. • The best would be if a manager with the decision power looks through the ideas and had the responsibility in that and sponsor some of the great ideas. • Problem is that even the great ideas does not fly. • Decision process has to be transparent, if the idea does not fit or there is no budget that is totally fine. • Not sure about the targets. What is serviceability? What should we do about it. Should we still innovate. How is that measured? • We have holistic technology skills within the team. • Issues with the timing of the idea. We are too late when suggesting changes on ready product or product with decided roadmap. • We could support with the Serviceability for example in terms of Network Design and Optimization NDO. • Targets per individual are ok. • Incentives are also ok but not much difference if they are quite small rewards. • Strength is that if we fail no-one will criticize.

			• Organization changes are too often and we don't get to understand what should be our goals. • When we are early involved in the product/service lifecycle we have direct contacts and are able to add value in terms of improvements and innovation. • Problem is that the learnings in the projects in terms of innovativeness is never taken to other projects. • OSS improvement ideas never taken through because of fear of cannibalization of the existing product and it's roadmap. • Stakeholder map is depending on your own personal contacts.
5	Respondent 10: Line manager	Strengths and barriers of current Innovation Framework.	• Focus in on Serviceability and Automation, mostly on Radio access products in 5G area. • Almost all successful ideas pushed through by one person having idea and the coding himself. • Lack of more ambitious ideas. Ok for incremental ideas. • Stakeholders kind of known but we don't know the channels to all the organizations for all ideas. • Need to do small investments and see how the ideas stands time and test. • More discussion and collaboration over the team and organization borders needed. • Ideas need to be refined before taking them forward, otherwise there is always someone how had the same idea and it might be developed elsewhere. • Mandate to innovate and framework is a strength. • Incentives are good to have. • Ideas need to need to have relation to what we are doing and to have channels to stakeholders in process. • Individual performance goals good to have also for innovation at least in the beginning. • KPI targets should be tied to the team in longer term. • Lack of support especially financial from middle management. • There is no time always for innovation follow-up. • Maybe Serviceability is better suited with clear focus and interfaces who receives the ideas. • Targets and ambitions for innovation from company not clear.
6	Respondent 11: Innovator	Strengths and barriers of current Innovation Framework.	• Focus on Pre- and early commercial 5G. Both NRO and NDO. • Good personal contacts help towards many organization. • Innovation Framework contact networks not clear. • Perseverance and believing to own idea required to drive through ideas. • If everything was easy the idea would never be refined enough! • Innovation coach required to push and share belief towards the idea for the innovator. • Forward looking mindset needed for innovation. Actively creating the better future. • Analytical skills not enough for strategical analytical thinking. • Creativity in practical level we have. • Cooperation and collaboration sometimes dependent on the individual.

			• We have skills and experience to think about customer real problem in contrast to research for example. Feedback loop between these two organizations would be needed. • Lack of risk taking. • Status quo thinking. • Fear of cannibalizing own products. • Evidence based decision making with “data-scientist” mindset lacking. • Support needed for patenting processes. • Innovation should not be only for elite group but across the organization. • We could be the link between CU and Research, but innovation should occur everywhere which we could help to share the culture. • One thing to fix: Common strategy for innovation.
7	Respondent 12: Serviceability Champion	Discussion to understand the objectives and process of Serviceability.	• Serviceability is about: ease of network operations (deployment and integration) and easy network assurance and diagnostics. It takes automation, machine learning. This all requires innovation. • Her role is SPOC for Serviceability in Service Area Networks (SAN). System technical coordination in Requirement Area (RA) serviceability for making sure there is good alignment between SAN and PDU. • Cost cutting and innovation. How can you do more for less: Serviceability. Meeting customer demands. Putting smartness into the system instead of people. • Right requirement for the product from start but also ideas are leveraged also a bit later. • Trying to be preventive in the issue management. Proactively identifying issues or making sure the customer buys the right services packages. • Automation can also be independent from Serviceability such as introducing automation to help from long lead times. • The processes are not ready yet for Serviceability • Opportunities for 5G Serviceability area are still in identification phase.
8	Participants 13-17 Line Manager, Innovator, Innovator, Innovator, Innovation Driver	Discussion whether the innovators have customer pain points to share for the 5G Serviceability.	Finding: • It was felt not feasible to share the ideas at the early stage while they are still being refined and studied. The fear was that someone on other site has same idea and the innovator is left to follow the other team take over the development. Moreover, a fear was that a heavy bureaucracy causes idea development to slow down and cause missing the momentum. • Innovator felt he should continue pursuing the idea via his own personal network as he had done so far.
9	Respondent 18: Innovation Driver	Strengths and barriers of current Innovation Framework.	• Driving innovation at the local site in Spain, following performance and driving workgroups. • Focus is Network Design and Optimization (NDO). • Direct Product Development Unit link for NDO is a strength. • Best ideas originate from project problems. • Contacts to the NDO business line, PDU and Customer Units where the projects are is the key. • The idea originator can be the solution architect for the idea even though it taken over to the PDU. He acts mostly as feedback loop facilitator from customer back to development.

			• Commitment of people is the strength. Always trying to improve things. • Workgroup is used to do training and learning innovation systematic skills. • Our organization does not have budget for innovation which is a barrier. • BL and PDU has budget for developing new ideas which is used. Also time to time from CU. • Individual KPIs must be measured with value or quality of the ideas not how many were submitted.
	Data 2, for Proposal building (Section 5)		
10	Participants 19-21: Innovator 1, Innovator 2, Innovation Driver (researcher)	Proposal building together with a few innovators of the local team based in Finland.	Problems further discussed: 1. Targets not clear. - Are we really an innovation organization? Job description does not mention it. - Strategy for us keeps changing too fast which causes projects to changing their competence areas which causes not being able to continue learning and then to improve (innovate). - We should be more focused on knowledge learning and knowledge sharing. And to improve that. 2. Stakeholders not clear: - It always requires good personal networks and it might not ever change. 3. Politics to innovation: - It is natural for all sites wanting to be unique and will always involve some political dimension.
	Participants 22-24: Line Manager, Middle Manager, Project Manager	Proposal building.	Proposal building discussion: - We will never get a dedicated budget just for our own SEU innovation purposes but if the innovation is part of Serviceability we should have direct sponsors. Decisions made: 1. End innovation initiative for team in Finland. Truth is it has slowly ramped down and seized in rest of the teams within the organization. 2. Focus on the Serviceability - Study how we could improve feedback loops to create value in the serviceability processes. Most likely it includes innovation type of activities.
12	Participant 25-26: Key Innovation Driver, Innovation Driver (researcher)	Proposal building.	Information received: 1. For support roles there is an initiative already after last discussion towards HR to create job roles for Innovation first in terms of external idea competitions we facilitate and later to the internal purposes wider in the company. Proposal building decision: 2. We should definitely focus on 5G innovation within the Serviceability area of 5G.
13	Respondent 27: Serviceability Champion	Discussion about innovation opportunities in Serviceability initiative.	Information received: - "Easy 5G" area has customer experience workgroup in place. Action points given (already validation): 1. Identify new 5G Serviceability opportunities and opportunity areas together with SEU FIN team. 2. What would be some of the 5G services opportunities? How to monetize them?

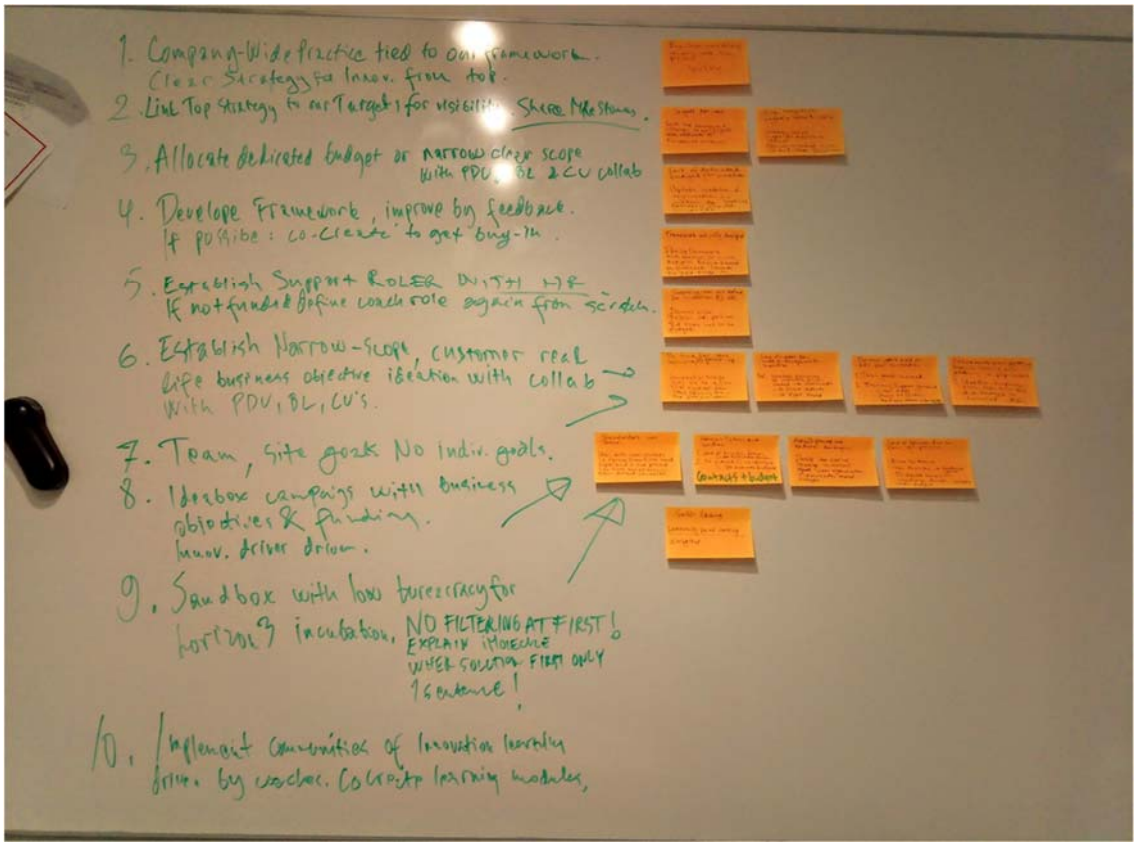
			3. What innovation management structures would be needed?
	Data 3, from Validation (Section 6)		
14	Respondent 28-33: Line Manager, Innovator 1, Innovator 2, Innovator 3, Innovator 4, Innovator 5	Validation, evaluation of the Proposal	- General agreement on the severity of the barriers presented. - We should be cautious with the ideas in early phase and depend on the own networks. - We could easily help with the Serviceability opportunities for example with NDO or NRO area with the experience that we have from customers. - Collaboration should be not only cross-functional but also with people with same function. - Example shared from earlier product development experience that the new ideas submitted were usually analyzed and good ideas developed. But the problem was to get customer feedback so they just did what they thought was good.
15	Respondent 34: Key Innovation Driver	Validation, evaluation of the Proposal	- Generally good feedback on the identified key actions. We should definitely focus on 5G with narrow scope on Horizon 1-2. New Emerging Business area should deal with the Horizon 3 business. - We should identify performance indicators at least for the whole Serviceability initiative ROI. - In short term we should focus on the cost savings side of the Serviceability initiatives and in long term in focusing in business growth. - We should take the actions in small steps and start with something we can easily - Cross-functional collaboration within the Serviceability process might be difficult to arrange. - For Serviceability there is existing 'ideabox' for collecting ideas which is a copy of what we use. Anyone can submit and the ideas are pre-studied for further development potential. - Most likely the new Emerging Business head will take some lead on the company-wide innovation and also in the Horizon3 space.

Appendix 2. Findings From the 5 Why's

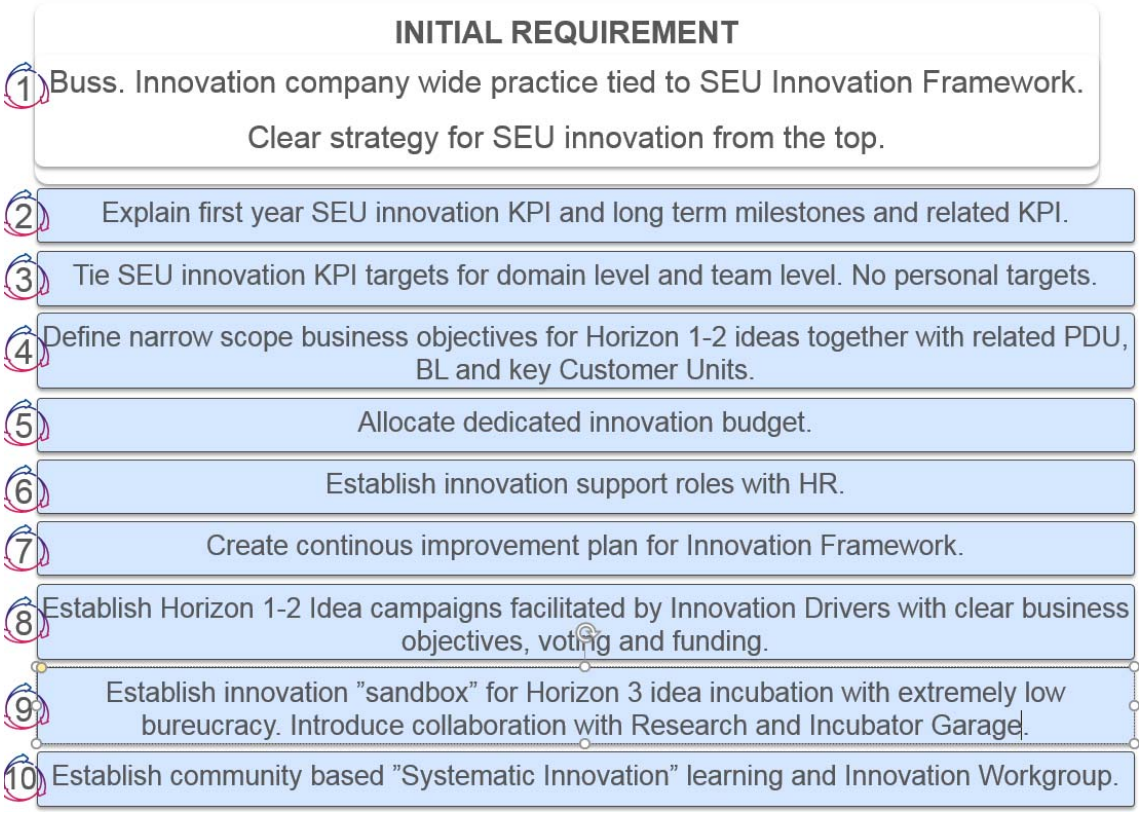
#	Barrier	Learnings
1	Lack of "Systematic Innovation" skills	Innovation Coach Training Program is too expensive since it is meant for coaches and managers only which seems to be non-sufficient.
2	The Framework is not fully developed.	Innovation framework development requires feedback based improving which needs time.
3	The Framework is not fully populated.	The managers and coaches did not fully learn the Framework due to thinking innovation is hard. There is a need for creating understanding to "ideation" phase by organizing campaigns related to real business problems.
4	Stakeholders not clear.	Ideas arising from real customer problems with first hand experience are easier to get realized.
5	Personal innovation goals/KPIs causing 'false' innovation.	The ideas are difficult to be refined due to not having dedicated budget for innovation causing ideators to just creating innovation with no real value. If goals were to be set to individual level there has to be a budget for innovation.
6	For Horizon 1 ideas the IdeaBox does not facilitate idea campaigns based on real business objectives.	Even though the initial purpose of the IdeaBox was to have such campaigns it was never really done due to not having enough time from the innovation drivers or real budget behind the campaigns.
7	For Horizon 3 ideas the innovation process is not mature enough.	A mature process for allowing agile "start-up" type idea incubation is not easy to implement in a massive corporation.
8	Lack of support from middle management for innovation.	Understanding what lies behind the budget allocation decisions is important. Dedicated budget is not in place which makes the managers cautios in evaluation of the ideas because of the associated risk
9	Targets not clear.	Cost cutting programs have caused organization changes causing delays in setting targets. At the same time the targets are often a trend which change year to year when middle management changes. There could be changes or loss in the message from top to middle management.
10	Lack of openness due to fear of politics.	Behind the politics there might be real issues such as lack of budget, no evidence based idea refining, or difficult stakeholder mapping.
11	Buss. Innovation -organization not driving company-wide innovation practice.	Reasons unknown. Not enough information to speculate and not being able to interview correct stakeholders.
12	Supporting job roles for innovation not defined by HR.	Support roles such as Innovation Coach or Innovation Driver are not defined as needed from SAN leadership team.

13	Targets high for “payable hours” work.	With short term goals for cost cutting the more ambitious ideas might not fly due to pressure on payable hours only.
14	No time for idea refining and follow-up.	One reason for the lack of time for the ideator’s idea refining and follow-up is caused by having no direct contacts due to the innovation scope is too wide.
15	Lack of dedicated budget for innovation.	Traditional organizations with separate operational unit, business unit and development unit limit the innovation capability for the operational organization such as the SEU by having no developer competences or dedicated budget for innovation.

Appendix 3. Drafting The Initial Proposal After 5 Why's Exercise



Appendix 4. Drafting the Initial Key Actions List



Appendix 5. Interview Template

Research Interview Template

TOPIC: _ SEU's Innovation Capability Strengths and Barriers__

Information about the informant (Interview 1)

Table 1

Details	
Name (code) of the informant	
Position in the case company	
Date of the interview	
Duration of the interview	
Document	

Field notes (Interview 1)

Table 2

	Topic(s) of the interview	QUESTIONS *<Your questions to the informant(s)>*	FIELD NOTES *<Your brief accounts of their answers>*
0	Clarify the FOCUS of the interview: 0.1 Role 0.2 Ideator and/or coach/mentor etc 0.3 International or local setting?	0.1 Please explain your role in the SEU innovation framework or any previous roles in the company focusing on innovation. 0.2 Do you contribute as ideator and/or Coach/Driver/Manager or something else. 0.3. Has the scope international/global or local focus?	

1	**Starting point 1: innovation Framework** **Define in clear terms of the innovation Framework that is discussed:** **1.1 innovation ENVIRONMENT (where?)** **1.2 innovation CONTENT (what?)** **1.3 innovation PROCESSES (how?)** **1.4 innovation PEOPLE involved (who?)**	1.1 Please explain where is the team located that you work with, in which location and environment? 1.2. Can you explain some of the content of the ideas i.e. some of the focus areas. 1.3 Is there a process for the innovation practice? 1.4 Who were the key stakeholders in some of the key ideas?	
2	**Interviewee's EXPERIENCE** **Ask to the interviewee to describe his/her experience in innovation Framework.**	2.1 Please give an example of how you have participated in the innovation framework or any SEU innovation agenda.	
3	**Investigate how the process of innovation has been done in innovation Framework.**	3.1 How was the idea generated and how the idea ended up in realization? What were the core logical steps in the process? Was it done as a process? How the approach was selected? What was the first logical step? Next? What was the last step?	
4	**Clarify the inputs and outputs of the innovation process.**	4.1 What was the expertise and resources that were involved? Who was involved? How long did it take? How would you evaluate the results, immediate and long-term?	
5	***Main topic* of the interview 1:** **KEY STRENGHTS** **5.0 Greatest strength** **5.1 People related** **5.1.1 Perceptions** **5.1.2 Skills** **5.1.3 Personal Goals**	5.0 If you consider your view on SEU's Innovation Capabilities from the top of your head can you name any single greatest strength? 5.1 If looking at the SEU's Innovation Capabilities can you explain some of the strengths or successes in regards to **people** and their 5.1.1 **perceptions** (motivation, biases,	

	5.2 Structure related **5.2.1 Organizational structures** **5.2.2 Cultural strengths** **5.2.3 Political strengths** **5.3 Strategy related** **5.3.1 Strategic decision taking** **5.3.2 Capabilities** **5.3.3 Resources**	attitudes), 5.1.2 **skills** (analytical, creativity, innovation knowledge) or 5.1.3 **personal goals** (expertise or company position goals) 5.2 If looking at the **structure related** aspects can you name any strengths in 5.2.1 **organizational structures** (processes, communication flows, incentives, centralized or non-centralized power, inter-function integration or collaboration), 5.2.2 **cultural strengths** (norms, values, beliefs) or 5.2.3 **political strengths** (lack of political games) 5.3. If looking at the **strategy related** aspects can you name any strengths in taking 5.3.1 **strategic decision taking** (competitive position, risk taking, breaking status-quo, overcoming future uncertainty, overcoming fear of cannibalization of successful current products) or 5.3.2 **capabilities** (key company or organization strategic capabilities, support functions) or 5.3.3 **resources** (Funding, equipment, people).	
6	***Main topic* of the interview 1:** **KEY BARRIERS** **6.0 Greatest barrier** **6.1 People related** **6.1.1 Perceptions** **6.1.2 Skills deficits** **6.1.3 Personal Goals** **6.2 Structure related** **6.2.1 Organizational structures** **6.2.2 Cultural inertia** **6.2.3 Political barriers**	6.0 If you consider your view on SEU's Innovation Capabilities from the top of your head can you name any single greatest barrier or weakness? 6.1 If looking at the SEU's Innovation Capabilities can you explain some of the barriers to innovation in respect to **people** and their 6.1.1 **perceptions** (lack of motivation, biases, attitudes), 6.1.2 **skills deficits** (lack of creativity, lack of innovation knowledge) or 6.1.3 **personal goals** (expertise getting obsolete or endangering position)	

	5.3 Strategy related **5.3.1 Strategic decision taking** **5.3.2 Capabilities** **5.3.3 Resources**	6.2 If looking at the **structure related** aspects can you name any barriers in 6.2.1 **organizational structures** (issues in processes, metrics, communication flows or incentives, centralized power, issues in inter-function integration or collaboration) 6.2.2 **cultural inertia** (issues in norms, values or beliefs) or 6.2.3 **political barriers** (political games) 6.3. If looking at the **strategy related** aspects can you name any barriers in taking 6.3.1 **strategic decision taking** (issues related to competitive position, risk aversion, status-quo satisfaction, uncertainty of future, fear of cannibalization of successful current products) or 6.3.2 **capabilities** (lack of key company or organization strategic capabilities, issues with support functions) or 6.3.3 **resources** (Lack of funding, equipment, people or their time).	
7	**Key Barriers** **7.1 Key barriers** **7.1.1 Reasoning for selection** **7.2 Overcoming the key barriers**	7.1 If you think of some of the barriers discussed can you name few that stand out the most. 7.1.1. What makes them to stand out? 7.3 How would you overcome the barriers?	
8	**To add**	8.1 What would you like to add that we have not yet discussed?	